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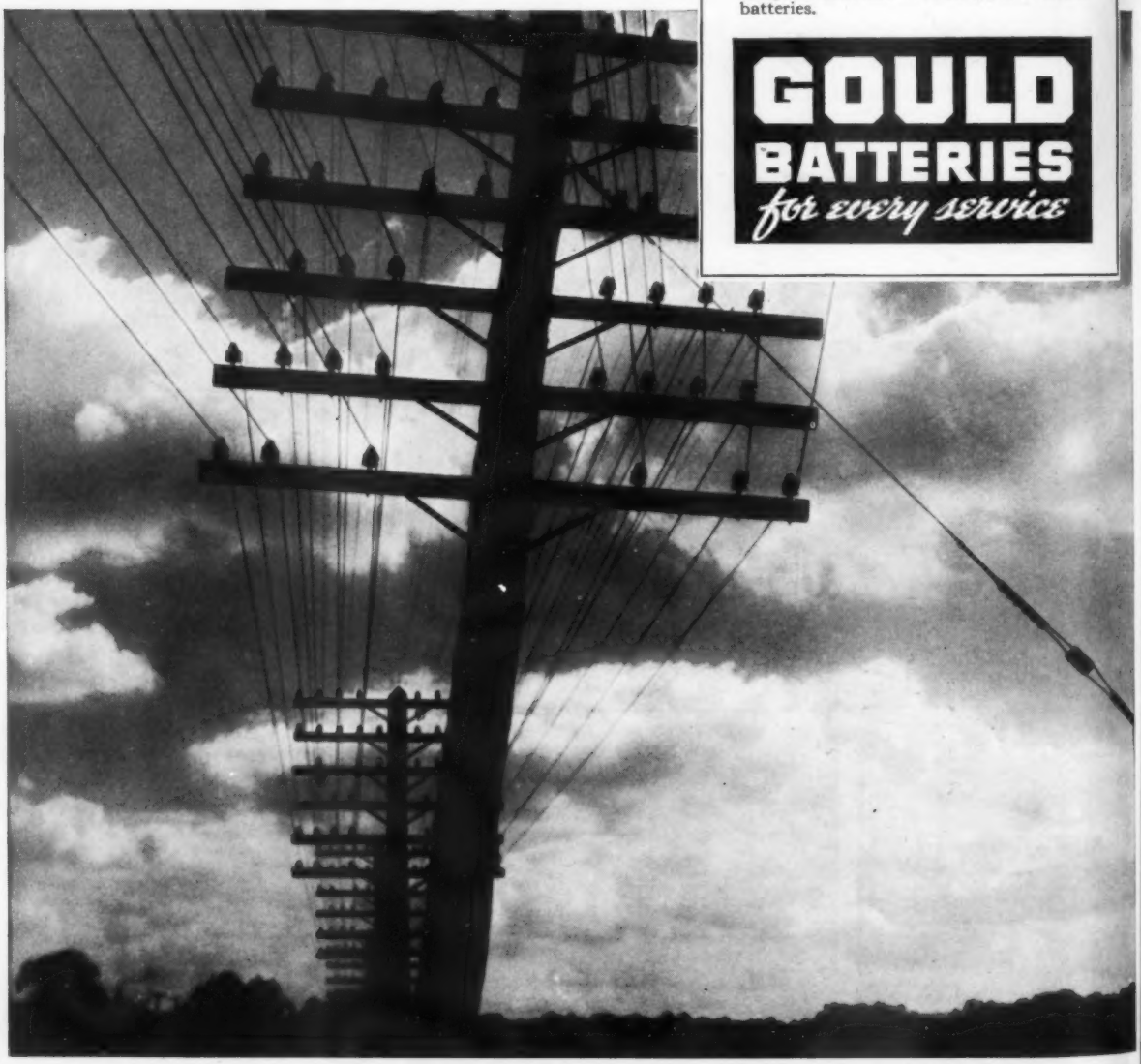

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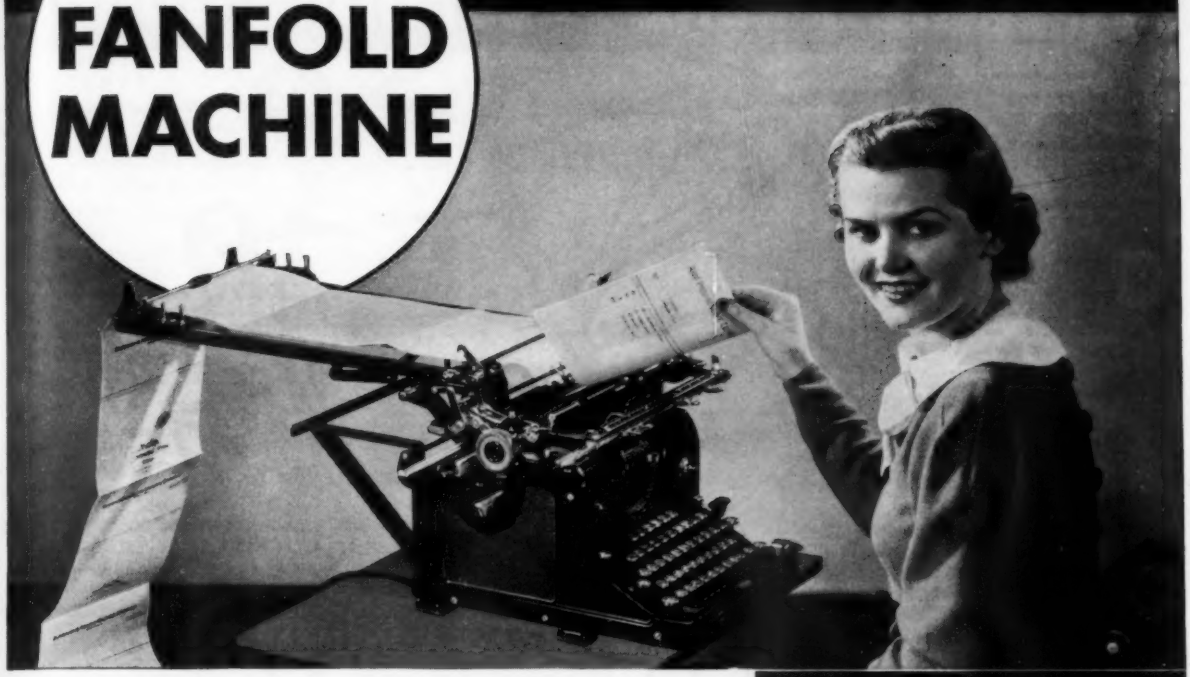

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The finest wear resisting textile available is used in outer braid, assuring long life.

4 BRONZE ALLOY CONDUCTORS

The Double Wrapped Conductor Ribbon is Bronze Alloy, selected for its greater physical strength and ability to withstand hard usage without breaking.

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The CELLULOSE ACETATE insulation is impregnated with a special non-corrosive moisture-proof compound providing additional protection against electrical leakage.

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Telephony

A Journal Of Progress and Developments In The Telephone Industry

September 4, 1937 Vol. 113, No. 10

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Telephony

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Interpret Customer to Company

IN SELLING SERVICE employes should not only interpret the telephone business to the public, but should also interpret the customer to the company. Sales activity, to be successful, must be carried on through the regular organization in order to attain improved service and public relations as well as increase revenues. No magic formula to selling; only essential is training employes to tell prospective customers fully and completely what telephone service will do for them. Address presented before the convention of the Oklahoma Telephone Association

By A. G. DAVIDSON

Commercial and Sales Supervisor of The Southwest Telephone Co., Brownwood, Texas

OUR BUSINESS is furnishing service, and we succeed best when our customers get the service they want. While we must continue to interpret our business to the public, we ought to give thought to interpreting the customer to the company. There is, and always will be, room for improvement in the service we furnish.

While on the whole we are doing a good job today, to continue to do a good job means to continue to improve. The backbone of our success must be satisfied customers.

Changing Attitude Toward Customer

A few years back the telephone business was a business where demand exceeded supply. Consequently our organization had fallen into the attitude of telling subscribers what they should have instead of looking at the market and determining what could be sold. This attitude has changed; and we now are looking at the business as a marketing agency should look at it.

It has been the experience of most companies that placing of responsibility for supervision and administration of the sales activity in the hands of a special employe engaged in selling service only is not generally productive of good results.

The very nature of a service and sales activity, in applying it company-wide and exchange-wide, is dependent upon individual initiative. This makes it necessary, in order to secure the maximum benefit, that the activity be carried throughout the regular organization. It places upon the sales director the responsibility of seeing that the sales job is one of everyday occurrence and is put on the same basis as all other reoccurring duties for each employe in the organization.

It has been found in sales activities that the full continuing advantages of employe's selling requires the development of a definite plan of operation in coordination with all departments. Such a plan must indicate its general scope and the work to be done with routines and reports for recording employes' sales. The broad benefits to be derived from employes' selling activities make it highly desirable that sales supervisors and team captains be appointed in all exchanges, to encourage and direct the full participation of each employe in the activity.

The sales supervisor, by stimulating and maintaining employes' interest in their day-to-day sales work will insure the success of a service and sales program, and each sales supervisor should by personal contact, personal participation and personal discussion; endeavor to keep the employes' interest in this work at a high level at all times.

Employes' sales activities accomplish not only the addition of revenues for the company but also result in an improved service and public relations, when these activities are plentiful and when they are conducted along proper lines.

Employes With Knowledge Overcome Timidity

In employe selling it has been found that there are many who have difficulty in developing prospects and in actually making sales due to timidity and, perhaps, lack of knowledge. These particular employes should be given every assistance and instruction from the sales supervisor and should be encouraged at all times in every manner possible to become sales-conscious and enthusiastic. Given the proper attention and assistance, all employes in time will overcome their timidity and become real, producing salesmen.

One of the greatest factors in pro-

ducing results in employe's sales activities is a thorough understanding upon the part of the employe of the underlying principles governing the various classes of services to be sold, the monthly rate for such service and the arguments to be used in promoting sales in each case. This means the ability at all times to sell to the prospect the value of the service that the company has to sell.

It is desirable that the general sales plan be sufficiently broad to permit all employes to participate in the sale of the available service. Therefore, each employe must have a knowledge of the service in sufficient detail as to allow him or her to properly explain its use and its cost to the prospect, and also to be able to intelligently answer the questions that may be asked by the prospect, or, perhaps, by a present customer.

It is vital in employe selling that the sales supervisor make sure that each employe is reasonably equipped to accomplish those things. It is only on this basis that the employe's efforts will be helpful to the customer and free from misrepresentation which results in misunderstanding insofar as our future relations with the customer are concerned.

Employe Has Favorable Position Compared to Salesman

One of the advantages of sales effort on the part of our employes is when it is directed towards selling among friends, relatives, neighbors and other people whom they meet as a result of their daily associations. In these circumstances the employe is usually in a natural and favorable role of personal acquaintance and not in the more difficult position of a salesman. As a result, he frequently has an intimate knowledge of the prospect's needs. Therefore, the general sales activities should be directed with this thought in mind.

It is well that we say something about the public with which we expect these employes to deal. About the expression, "the public," and the other expression, "public opinion," we talk a lot, and we must strive for a correct understanding. It is important that our sales people remember that "the public" is a collective name for a group of individuals.

"Public opinion," or "the public," is purely the total of the simple mathematical sum. Simple though this sum may be, it has its peculiarities. The peculiarity is this: All individuals are not equal in their influence upon public opinion. Instead of each counting for one, some count for more than one and others count for less than one. As a sales prospect, this is true of "public opinion" and also of "the public."

Let us say that in a given community made up of 5,000 people is a market for $10,000 worth of merchandise. In that case some one individual in that town would probably buy $1,000 worth and others will buy much less; some will not buy any. The salesman should, therefore, land his $1,000 prospect early in his campaign.

Considering public opinion in this community, the 5,000 individuals are divided between the leaders and the followers. Among the leaders, there may be one outstanding individual who does more thinking, has more opinions and controls more followers than anyone else in town. Well, Mr. Salesman, he is the first man you should have on your side.

Contact Prospective Customer as an Individual

In selling the public or informing the general mind that is molding public opinion, your work is with individuals. Your problem is the public. Do not be misled by the fascinating thought of waving some magic wand over the whole group and thus getting your results. On the contrary, follow the simple, scientific fundamental practice of splitting your problem, the public, into its individual units, individuals, and then treating each unit separately.

Always visualize the public as a group of individuals. Get each individual's number; that is, learn to know them by their importance to you. Then apply your sales methods to each individual, according to what you know of him, and work on each individual in the order of his importance to your purpose.

To sell telephone service, you don't need any magic formula. There is no formula. Selling, in a sense, is merely telling people what you have to sell, picturing some of its many uses and advantages to them.

You don't have to be high-powered. In fact, high-powered selling is far from being desired. People dislike to be high-pressured. You approach prospects with the view of giving them service, for you believe they need this service, and you will not be high-powered.

Know what you have to sell. This means not only knowing the various items available, but also the uses and advantages of each. Then you will have this knowledge on the tip of your tongue. This will enable you to give convincing arguments but, more than that, it will aid you in visualizing the customer's needs and in suggesting solutions to his service problems.

Tell the prospect what the servi will do for him. Talk in terms his own comfort, convenience an pleasure. He is interested only in this. It is the secret of argumentation, if there be any secret. Show so clearly, so convincingly, how th service will benefit him that he wi be anxious to have it. Talk about price last of all.

If our employes are not thoroughly familiar with the service which they are discussing with the prospect, then it is our duty to acquaint them with this information. In this way they will avoid misunderstanding. They can close a sale as well as anybody so long as they are sure they have all the necessary information.

Many Reasons Why We Should Sell Service

There are a number of reasons why we should sell our service:

It saves work. A telephone saves trips—trips from one part of the household to another, trips across the street to the store, shopping trips down town, trips out of town.

It saves time. As a great newspaper columnist once said, "A telephone saves time, and time is all we have," meaning that time is the most precious thing that we have. Time saved by telephone is usually working time—time that can be devoted to pleasure, rest or recreation.

The telephone is a protection. Emergencies come unawares. They call for action. Emergencies, such as unexpected visitors, usually call for action—orders to the store. In the case of serious emergencies—when an accident occurs—the plumber, electrician, doctor or fire department is needed. Action must be taken quickly and a telephons is a godsend.

It gives pleasure; it affords quick contact with relatives, neighbors and friends, relieves lonely hours; and it costs little.

Of all the things you buy, probably none gives so much for so little. At any hour of the day or night, the telephone stands ready to serve.

▼ ▼

Maine Convention to Be Held in Two Towns

This year's annual meeting of the Telephone Association of Maine has been scheduled to be held in two towns, with a one-day's program planned for each meeting. The first meeting on the first day will be held at Poland Springs on September 20 and the second at Lakewood on September 21.

AUTOMATIC TICKETING Of Telephone Toll Calls

By LESLIE B. HAIGH, M. A., A. M. I. E. E
Development Laboratories, Bell Telephone Mfg. Co., Antwerp, Belgium

DEVELOPMENT OF EQUIPMENT for automatic toll ticketing makes possible full automatic dial service for toll as well as local calls. Method of routing calls upon installation of new ticketing equipment. Published by courtesy of Electrical Communication

A NEW TELEPHONE facility known as automatic toll ticketing was first placed in public service in the town of Bruges, Belgium, December 7, 1936. This event, which may have far-reaching consequences, marks a further step forward in the evolution of communication systems.

It demonstrates the practical possibility of offering to a telephone subscriber the advantages of full automatic dial service for toll as well as local calls, coupled with an individual printed record of every toll call, in which no human agency, save the calling and called parties, has been involved.

The laboratories of the Bell Telephone Mfg. Co., Antwerp, have been engaged for some time in studying the problems of introducing national dialing—"automatic toll" service—in several European countries, including Belgium. The most important Belgian towns—Brussels, Antwerp, Liége, Ghent, Charleroi, Tournai, Bruges—and many of the small towns and villages surrounding them, already enjoy automatic service for urban and rural calls.

In Belgium, many of the signaling and transmission problems involved in long distance dialing have already been solved by the extensive introduction of operator dialing over toll lines with the aid of the 50-cycle and "two-voice frequency" impulsing systems.

One of the difficulties in extending toll dialing in Belgium to the subscribers themselves arises from the prevailing tariff law. Whereas a subscriber is charged for every toll call he makes, he is entitled upon payment of his annual rental to a limited number of local calls without extra charge. To comply with the law, the charges for toll and local calls must be computed separately.

It follows that, if toll calls are to be metered automatically, each subscriber must be provided with a second message register for this purpose, a task of some complexity in existing automatic exchanges. Automatic ticketing offers a solution to this problem also.

The Belgian Régie has followed with interest the steps in the development since the idea of automatic ticketing was first mooted, and has assisted materially by giving the Bell Telephone Mfg. Co. the opportunity to tender upon several practical applications. Acknowledgment is due also to the engineers of The Hague Municipal Telephone Administration for the sympathetic interest they have shown in the discussions which have taken place on this subject.

On April 22, 1936, the Belgian Régie placed with the Bell Telephone Mfg. Co. an order for a field trial installation of automatic ticketing equipment in the Bruges exchange. This equipment was to permit calls to be established by dialing and without the intervention of an operator, from Bruges subscribers to subscribers in the neighboring seaside town of Blankenberghe, nine miles away, and therefore outside the local zone.

Both towns have had dial service for local calls for some years. Bruges is the toll switching center of West Flanders, and the 3,000-line automatic exchange, cut-over in October,

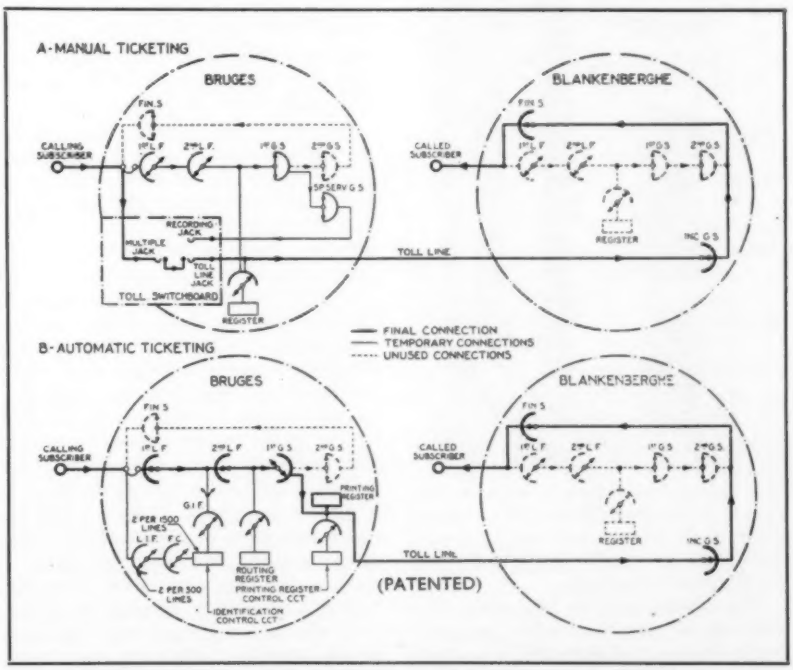

Fig. 1. Routing of Calls from Bruges to Blankenberghe, Belgium, Before and After the Introduction of Automatic Ticketing.

1932, was one of the first 7-D rotary system installations in Belgium. Blankenberghe has a 900-line exchange, also 7-D rotary, dating from July, 1934.

The latter was designed at the outset for direct dialing in the direction of Blankenberghe-Bruges on a multimetering basis. Traffic in the opposite direction has hitherto been handled manually, the operators in Bruges dialing the numbers of the Blankenberghe subscribers, and supervising and ticketing the calls.

In any system of automatic ticketing of telephone calls, the absolute minimum of information recorded upon each ticket must be such as to determine directly or indirectly the proper charge for the call and the identity of the subscriber to whom it is chargeable. The latter can evi-

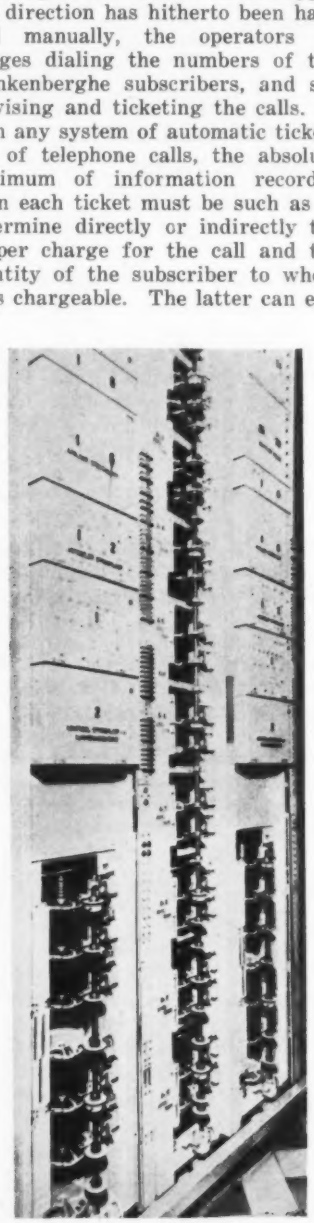

Fig. 2. The Calling Line Identification Equipment.

dently be conveniently indicated by his directory number.

The charge can be computed in a variety of ways: directly by automatic means and recorded by a code or in monetary values; or indirectly from a record of the directory numbers of the calling and called subscribers (or of the unit tariff), together with the duration of the call (or the time of commencement and termination).

In the installation in question, a record is made upon each ticket of more particulars than are strictly necessary, and the ticket is thus both adequate for accounting purposes and acceptable to the subscriber. The record consists of the directory numbers of the two subscribers, the tariff per time-unit of conversation, and the number of such units expended.

The date and the time of day (to the nearest five minutes) are also recorded for the benefit and satisfaction of the subscriber, together with identification marks useful to the operating staff.

It is interesting to compare the routing of calls since automatic ticketing was introduced with the method by which the same calls were established previously by operators, and thereafter to examine the problems involved in obtaining automatically the information which those operators themselves recorded upon the tickets.

Before the introduction of automatic ticketing, a Bruges subscriber desiring a connection to a Blankenberghe subscriber first dialed special service "02." The Bruges register routed the call over first and second group selectors (see A, Fig. 1) to a jack circuit at one of the rural positions. An operator inserted a plug in the jack and inquired both the number of the caller and the number desired. She then inserted the second plug of the same cord in the calling subscriber's multiple jack.

Having verified the correctness of the information given, she released the original dialed connection by a key and transferred the first plug into the jack of a line to Blankenberghe. Another Bruges register attached itself to this line and the operator dialed into it the five digits of the desired number. The register routed the call to the line of the Blankenberghe subscriber and, while awaiting his reply, the operator prepared a ticket for record. At the end of the call the ticket was completed and dispatched, together with other toll tickets, to the sorting table.

The new service, although involving a minimum of modification of the existing plant, has simplified the procedure. The lines to Blankenberghe, hitherto accessible only to operators, now appear in the arcs of the first group selectors and are each furnished with a printing register and a controlling relay group or "out-

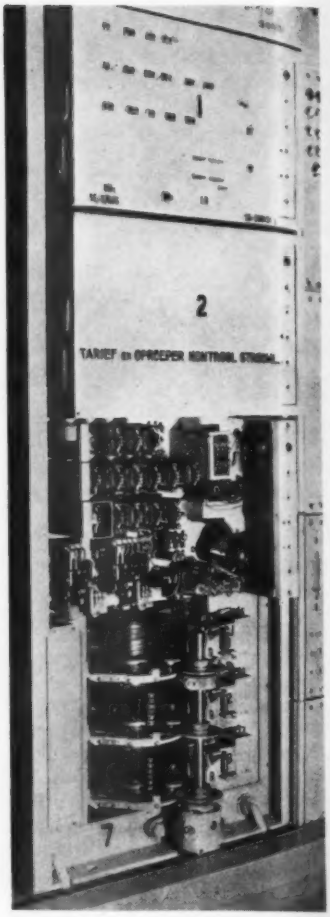

Fig. 3. The Printing Register Control Equipment.

going repeater" containing timing apparatus (Fig. 1-B).

A Bruges subscriber dials, instead of "02," the number of the subscriber he desires to call. The routing register selects a line to Blankenberghe over the first group selector and then routes the call directly to the desired line in that town.

A printing register, associated with the outgoing end of the toll line, is supplied automatically with the necessary information for the recording of the call. When the call is finished, the register produces a ticket with the information printed upon it and ejects it through a chute into a container.

Printing the Number of the Called Subscriber

Although the Blankenberghe exchange as yet has less than 1,000 subscribers, it is in the Bruges rural area in which all subscribers have five-digit directory numbers. It follows that all the Blankenberghe subscribers have numbers beginning with the same two digits, which the

routing register recognizes as indicating a Blankenberghe call and translates into the single train of impulses required for the selection at the first group selector. The remaining three digits are transmitted without translation to the outgoing relay group, which relays the impulses both to Blankenberghe and to the digit-wheel in the printing register.

The latter thus receives the last three digits and prints them upon a paper strip, as they arrive, but receives no indication of the first two digits. However, these digits are always the same, as already stated, and the printing register is furnished with a patented device whereby at the first printing operation they are printed in front of the digit received. The strip now carries a record of the called subscriber's number.

As soon as the selection of the desired line is complete, the routing register disconnects itself, and from this moment two series of operations take place simultaneously. On the one hand, upon the reply of the called subscriber, timing of the call begins

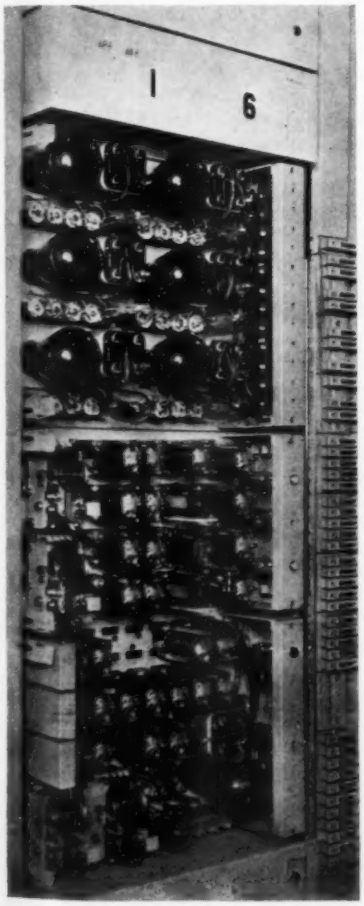

Fig. 4. Layout of Relays and Valves.

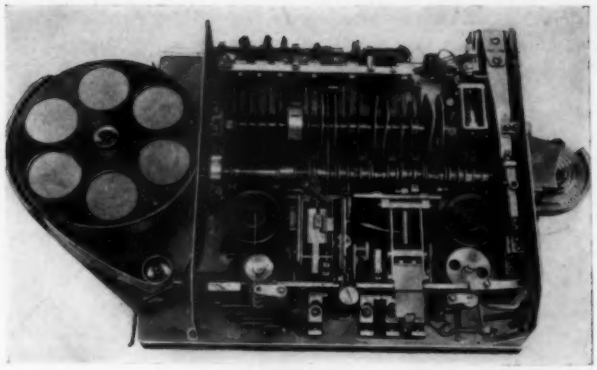

Fig. 5. The Printing Register With Cover Removed.

in the outgoing relay group and, after the usual six seconds of "free time" have been counted, the call is registered as "effective" and chargeable by the operation of a relay.

On the other hand, one of a common group of "printing register control circuits" attaches itself over a finder switch to the outgoing relay group and proceeds to direct the printing of the "tariff" or charge per time-unit of conversation. In the present installation, since only calls outgoing from Bruges to Blankenberghe are as yet ticketed automatically, this operation is quite simple, for the tariff is always Frs. 0.80.

The printing register is capable of printing any number composed of four digits and can also print a "dash" when required. The control circuit accordingly creates the requisite trains of impulses and transmits them to the digit-wheel in the printing register for printing at the end of each train of impulses.

In order to separate francs and centimes by a "dash," the printing signal is given to the register without any impulses to the digit-wheel, and the strip now carries also the inscription 0-80.

The next operation presents greater difficulty. It is necessary, in the first place, to determine the identity of the calling line, which can be achieved only by tracing the call back to the line equipment; and, in the second place, to convey this information from the line equipment to the printing register.

Since these two points in the connection are separated by first and second line finders and first group selectors, which were already existing, the provision of a new signaling path by the addition of brushes to these switches was evidently impracticable. The use of alternating currents at voice frequency made an economical solution possible, involving a very small amount of modification and disturbance to existing equipment.

In each "link circuit" a condenser is connected between one of the brushes of the first group selector and the "metering" brush of the second line finder. A lead is run from the metering brush of each first line finder through a condenser to new and patented equipment known as the "calling line identification" equipment. Finally, a connection is made from every subscriber's message register to this equipment.

To initiate the identification process, the printing register control circuit connects a 2,000-cycle tone to a lead in the outgoing relay group, whence it passes through the link into the identification equipment. There it is detected in a starting circuit containing a thermionic valve; and a group identifying finder in one of a group of "identification control" circuits, which has been preselected by an allotter, begins to rotate.

This finder has a terminal in its arc reserved for each group of first line finders, and to this terminal are connected the leads coming from the metering brushes of all the first line finders in that group.

The calling tone thus finds its way to one of these terminals, and as soon as the rotating finder reaches this terminal, the tone is detected a second time by another thermionic valve and the rotation is arrested. The position in which the finder has stopped now indicates the group of first line finders which has access to the calling line.

In Bruges, although jumpering facilities between the first line finder and final selector multiples are provided, all lines are jumpered "straight"; that is, they appear in corresponding position on the line finder and final selector arcs. It follows that, when the group of first line finders having access to a line is known, all the digits of that line's number except the last two are equally known. The first step in the identification of the calling line is thus achieved.

The next step is to determine the

position in which the brushes of the first line finder are standing, since this fixes the "tens" and "units" digits of the line number. To this end several groups of line identifying finders are provided. To the arcs of these finders the leads coming from the subscribers' metering wires are connected, one hundred lines to a level. There are three such levels on each finder, which therefore has access to 300 lines.

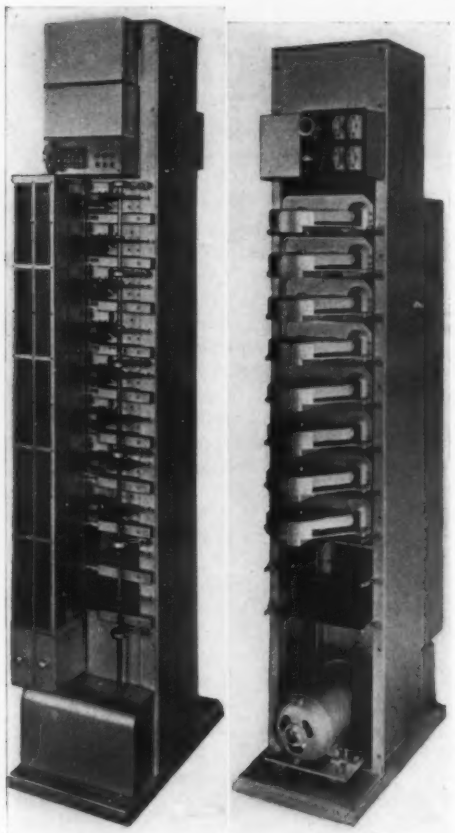

Fig. 6. Front and Rear Views of the Printing Register Bay.

The calling tone thus finds its way also to an arc terminal of each of the finders in one of the groups, the group being already known from the position of the group identifying finder. A finder in this group is accordingly chosen by the identification control circuit, through its finder chooser, and begins to rotate.

When the brush reaches the terminal carrying the tone, the valve in the control circuit immediately detects it and the rotation is arrested. The position of the brushes indicates the last two digits of the line number, which has now been completely identified.

As soon as this occurs a tone of a different frequency is transmitted in a forward direction from the identification control circuit, to the printing register control circuit, over the same path in which the calling tone is still being propagated in the opposite direction. It is detected by a valve and causes the calling tone to be disconnected.

The final step is to transfer the number of the calling line to the printing register. This is achieved by transmitting, again over the same path and to the same valve, trains of impulses of alternating current at tone frequency, controlled digit by digit in accordance with the positions assumed by the group and line identification finders.

The impulses are relayed to the printing register and the digits printed one after the other upon the paper strip. The strip now carries a record of the directory numbers of the lines in communication and of the tariff chargeable, and the printing register is ready to record indications of the conversation's duration.

By this time, an average of perhaps 15 seconds after the end of selection and the beginning of ringing, conversation may already have begun. If, or when, the call is registered as "effective," a signal is sent to the printing register and three small holes are punched one after the other in the paper strip.

The time-unit of conversation in Belgium is normally three minutes. Long-distance toll calls are, however, charged per elapsed minutes after the first period of three minutes.

For the sake of uniformity, the printing register has been designed to punch three holes, each representing a chargeable minute, upon receipt of the first signal and thereafter to punch one hole for each succeeding signal at one minute intervals.

The timing mechanism in the outgoing relay group consists of a step-by-step switch advanced under the control of a master chronometer. It sends signals to the printing register when the call is "effective," as already stated, and at the end of every minute thereafter, except the first two, when signals are unnecessary because three holes have already been punched.

During the punching of these first three holes, the opportunity is taken to print the date, the time of day, and the machine's own identification mark and serial number. The three printing operations are spread over the three punching operations to reduce the load on the moving parts.

While conversation is in progress, the paper strip thus acquires further records indicating when conversation began and how long it lasted, together with useful identification marks.

When the outgoing relay group receives the signal to release, the printing register advances the paper strip, if this be necessary, until sufficient paper to make a ticket of normal length has passed the knife. It then severs the strip and ejects the ticket into a chute.

Theoretically, the relay and valve equipment composing the identification starting circuit could be common to the whole exchange; and a single group of identification control circuits would suffice. In order to increase the security of the new service in this trial installation and to avoid any possibility of unforeseen trouble throwing the whole identification equipment out of action, it was deemed advisable to provide a starting circuit for each 300 lines and a group of identification control circuits for each 1,500 lines.

Two circuits in each group could easily carry the traffic expected from these lines but, also for reasons of security, space was reserved for a third. A group of identification finders was provided for each 300 lines, two finders being equipped with space reserved for a third. The whole of this equipment is accommodated upon three bays (Fig. 2).

The center bay mounts 30 identification finders and it will be seen that every third space is vacant. The other two bays are of the "combined" type, mounting the finders of the identification control circuits at the bottom, and the relay and valve equipment of these circuits and of the starting circuits above.

The top finder on each combined bay is a routine test access finder. The bay is thus a complete unit serving 1,500 lines. (Fig. 4 shows the layout of the relay and valve equipment.)

The printing register control circuits, inasmuch as they contain the valve and relay equipment for converting voice frequency signals into direct current signals, may be considered as accessory to the identification equipment proper. They are mounted on another "combined" bay together with the outgoing relay groups.

The bay mounts ten relay groups

at the top and three control circuits with their finders at the bottom; Fig. 3 illustrates the lower part of the bay. Figs. 2 and 3 together give an idea of the small amount of rack-mounted equipment added to a 3,000-line exchange, purely for purposes associated with automatic ticketing.

Fig. 5 illustrates the power-driven printing register, and Fig. 6 shows the front and rear views of a patented apparatus bay designed to mount 10 such printing registers together with suitable motor control and supervisory equipment.

The register measures 532 by 300 by 118 mm. (21 by 12 by 4¾ ins.) overall, and is designed to jack-in from the rear of the bay. With the machine properly jacked-in, a flexible gear wheel protruding from the front (see Fig. 5) can be brought into engagement with the rotating vertical shaft of the bay.

Through bevel gearing, the flexible wheel drives a shaft carrying mechanical cams. The different printing operations and the punching, cutting, and ejecting operations are controlled by these cams, which are engaged with the shaft in the proper sequence by mechanical means.

A strip of paper is fed from a roll into the rear of the machine, where it is caught between friction rollers, and passes between guides before various type wheels, a punch, and a knife; and the cut tickets are ejected through a deflector-slot into one of two chutes running down the front of the bay.

At the foot of each chute is a container, one for tickets of all kinds recording subscriber calls, and the other for routine test tickets which are separated automatically from the rest by the hinged deflector-slot. The bay is so designed that at a later date, when the traffic has increased sufficiently, the first container can be removed and the tickets conveyed by a belt conveyor direct to the sorting desk.

For each operation the cam shaft makes one revolution and the paper strip is advanced one step. The register has a normal cycle of 36 operations. The normal ticket thus has a length equivalent to 36 steps.

The first 21 operations are concerned with the printing of the called and calling parties' directory numbers and the tariff with suitable spacing between them. The next 14 are punching or spacing operations, according to the duration of conversation; and the last is the cutting and ejecting operation.

Calls lasting 14 minutes or less are thus recorded on a ticket 36 steps long. For calls lasting longer than 14 minutes, the ticket is extended without limit beyond its normal length.

The date and the time of day are printed from type-wheels advanced by impulses transmitted by a master clock. The fixed type, from which are printed the register's own identification mark and the invariable digits prefixed to the called line number, are carried on members arranged to jack-in and are therefore readily changeable.

The other numbers are printed digit-by-digit from a typewheel advanced by current impulses from the associated relay group and restored mechanically after each printing operation. A standard typewriter ribbon supplies the ink for printing

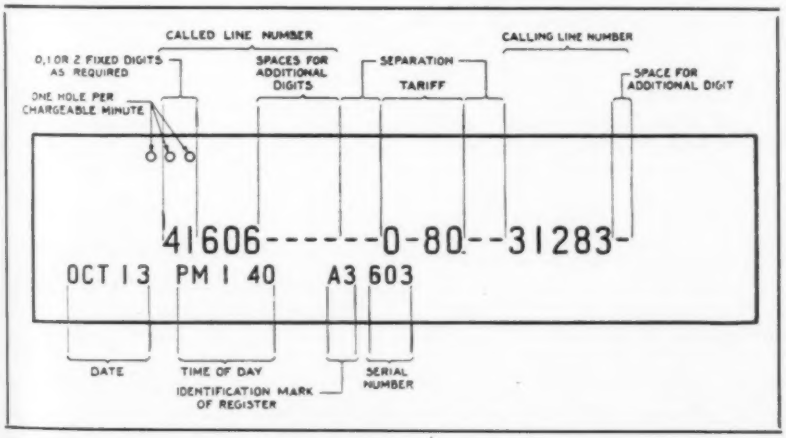

Fig. 7. Arrangement of the Ticket.

and is advanced and reversed automatically.

Fig. 7 is an illustration of a typical ticket of normal length. It measures 116 mm. by 30 mm. (4⅝ in. by 1⅛ ins.). It will be seen that, although each of the line numbers shown has five digits, the printing register is capable of printing calling line numbers with up to six digits and called line numbers consisting of up to seven variable digits preceded by one or two invariable digits.

The discrepancy between the two numbers is explained by the neces-

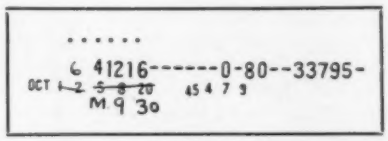

Fig. 8. Record of First Call Ticketed Automatically.

sity, in the case of long distance calls, of indicating the identity of the area or town to which the called number belongs.

The first ticket recording a commercial call bears the date October 6. How it came to be produced two months before cut-over is a story in itself, and illustrates the immense value of the documentary evidence afforded by such a record. Fig. 8 is reproduced from a photograph of this interesting ticket.

On the day in question, testing of the equipment was in progress in preparation for a demonstration arranged for October 8, 1936. Among the test tickets in the container, a ticket was noticed which carried two regular subscribers' numbers. The calling number was found upon investigation to belong to a railway depot in Bruges.

This number was immediately called up by the Administration and the official who replied was informed that a call had been put through automatically to the Blankenberghe railway station. This was, of course, contrary to regulations because the new service was not yet open to the public.

The call was at first emphatically denied, as might have been expected, since only the person in charge of the depot is allowed to make calls outside the Bruges local area. Eventually, when the overwhelming evidence of the date, time, numbers involved, and duration of conversation was appreciated, the call was reluctantly admitted by an employe—and duly charged.

An interesting innovation in the new equipment is the arrangement for adjusting automatically the type-wheels in the printing registers from which the date is printed. Precisely at midnight every day an impulse must be sent to all the date counters in order to advance the day of the month.

At the end of the month two dif-

ficulties arise. In the first place, any counter constructed with tens and units digit wheels must necessarily have a cycle which is a multiple of ten steps. Actually the date counters have a cycle of 50 steps. At the end of each month, therefore, when a new cycle begins, the counters must be advanced.

Secondly, the number of steps varies from month to month, as the number of days in the month varies. A special arrangement for dealing automatically with this situation has been devised. A small relay group and four step-by-step switches receive an impulse at midnight every day, and the switches are advanced according to a combination which is such that their relative positions are repeated only once in four years.

The days of each month are counted and the appropriate number of impulses are transmitted to all the printing registers at the end of the month. During this process of adjusting the monthly cycles, the printing registers are prevented from recording non-existent dates, such as the 36th day of the month.

The changeover from "summer time" to "winter time" by automatic means is not possible owing to the varying dates when these changes occur, but precautions have been taken to enable the adjustment to be made, without interfering with the service, by a member of the exchange maintenance staff.

Since the day of its inauguration the automatic ticketing equipment has functioned smoothly, and the quality of the service has in every way fulfilled expectations. The exchange is being maintained by the regular maintenance staff and no unforeseen difficulties have been encountered.

The Operators' Corner

By MRS. MAYME WORKMAN
Traffic Supervisor, The Illinois Telephone Association, Springfield, Ill.

STUDY THESE 21 tips on how to become a successful and well-liked leader. Series No. 300

IT IS A recognized fact that a chief operator must be a leader if she desires to obtain satisfactory results in rendering telephone service to her customers.

Donald A. Laird, formerly of Colgate University, in his book, "How to Use Psychology in Business," gives the following 21 traits which should be developed or acquired to be a successful leader of people:

"(1) Accept criticism cheerfully. (2) Read widely about your work. (3) Keep your spirits up when things go badly. (4) Encourage those working under you or with you to give suggestions, and act upon as many of these as possible. (5) Delegate responsibility and develop it yourself by first teaching the fellow under you how to fill your job, and then try to learn how to fill the job ahead of you. (6) Size up others closely so that you are able to know what they can do and what they cannot do.

(7) Learn to like to make decisions, and do not avoid making them promptly. (8) Keep free of prejudices by dealing fairly and squarely with others, regardless of race, religion, or social standing. (9) Express your sincere opinions, without apologizing for them. (10) Praise others for their good work, but do not become a flatterer. (11) Criticize the work of others but do not antagonize them. (12) Get the habit of concentrating under difficult conditions of light, heat, and noise. (13) Assume the responsibility for your own mistakes—don't pass the buck!

(14) Examine your own decisions critically for a few minutes before accepting them as final. (15) Speed up your own time of making decisions, but do not go off "half-cocked." (16) Develop your own way of speaking until your words sound as if you had confidence in them. (17) Make people feel at ease when you are talking with them. (18) Be consistent in your dealings with others. (19) Have a high sense of justice, but do not become 'preachy.' (20) Look people squarely in the eye. (21) Be able to enjoy a good joke."

Every one of these traits can and will be helpful to chief operators in their particular line of duty. Space will not permit analyzing all of these traits, so let's select a few and see how applicable they are to our business; No. 2, for example: How many chief operators "read widely about their work"? Those who do follow the practice of doing so are much better equipped to fulfill their responsibilities and have a much broader outlook.

"Keep your spirits up when things go badly." If you do you can solve the trying and perplexing problem and find a satisfactory solution. On the contrary, if you are ready to throw up the sponge every time something goes wrong, your operators will sense your attitude and within a short time Mr. Gloom will cast his shadow over the entire office.

How many chief operators encourage their supervisors and operators to offer suggestions for the betterment of the service? They are right on the firing line like the soldier in battle and this experience teaches them many things which places them in a position to offer helpful suggestions if they are encouraged to do so.

No. 5 (responsibility) is a most important trait, too frequently neglected and often resulting in chaos when unexpected resignations are tendered. Too many chief operators assume all responsibility instead of teaching others their job.

Questions from Illinois Operators

1. What is the difference between a tributary and an "rd" tributary?
2. In taking a long distance call, in asking the calling party for his name he gives a phony name, what then?
3. Who should make the In ticket on a messenger or two-ticket call?
4. What procedure should be followed on a person-to-person collect call when the called party refuses to accept the charge and the calling party says "hold for AG"?
5. On a call placed station-to-station or person-to-person without the called number, should you pass the called number to the calling party each time you have the call if you have the call more than once a day or several times a week?

The answers to these traffic questions are given on page 27.

▼ ▼

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The fifth edition of the Michigan Police Telephone Directory, published as an aid to law enforcement officers in their war on crime, has been distributed to local, county, state and federal authorities throughout Michigan by the Michigan Bell Telephone Co.

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IN THE NATION'S CAPITAL

By FRANCIS X. WELCH

Special Washington, D. C., Correspondent for TELEPHONY

ADMINISTRATION KEY MEN are in a "dither" over the problem of a special session of Congress. Fate of bills, in which the telephone industry may be interested, depends upon President's decision. Some excerpts from REA Chief John M. Carmody's letter blasting the Massachusetts commission for its decision that REA cooperatives should have sound financial structures the same as required of other state power utilities

JUDGING from the recent mail your correspondent has been getting, some telephone executives are wondering whether or not there will be a special session of Congress. They are not exactly worried about it—just a bit puzzled.

Well, that just about makes it unanimous because not only are the ubiquitous Washington observers gnawing their fingers tips over the perturbing problem, but the administration key men (in other words, the chaps whom the observers are supposed to observe) can be observed in no other state than what the British commentators would laughingly call a "dither."

TRUTH TO TELL, the administration simply cannot make up its mind. The "run out" of the recent session of Congress has placed the President in an uncomfortable dilemma. On the one hand, there is the large crop of "must" bills which occupy the theater of activities for the next session—the toughest of all, incidentally, seem to have reserve seats near the front. Just look over the unfinished business: (1) Reorganization of administration agencies; (2) the crop loan bill; (3) general tax revision; (4) wages and hours bill.

These were on the President's "must" list last spring. They are now, presumably, on his "please, for gosh sakes" list. But that isn't all. Also having preferred status is the Gavagan-Van Nuys anti-lynching bill, which contains plenty of dynamite for the New Deal down South if the President ever signs it. Then there is Senator Norris' "seven TVAs" bill which the White House can't seem to get enough congressmen interested in to get together a committee quorum on it.

Next, consider the fact that 1938 is an election year, which means Congress will absolutely refuse to stay in harness through the next summer as it did this summer. At the first hint of a filibuster on any of these bills, Congress would just ditch the bills and beat it out of Washington —and there will be plenty of folks around next year to hint about filibusters.

To sum up, therefore, it would seem that if President Roosevelt wants to salvage any respectable portion of his reform program, he must call a special session or run the risk of having Congress run out on him just as it did this year. There is just too much argument wrapped up in that tough collection of bills to be disposed of in a smooth, short session.

Now consider the other horn of the President's dilemma. From abroad the war clouds augur more and more international complications. For obvious reasons, no President likes to have a meddlesome Congress hanging around when he has to handle the trying, ticklish job of walking a neutrality tight rope through a war-torn period and handle delicate diplomatic situations at the same time.

Once the nation gets into a war (which Heaven forbid), a congressional session is needed. In fact, it is necessary as evidenced by the record-breaking War Congress called by President Wilson, which stayed almost continuously in session during its lifetime. Until the time is ripe for war declaration, however, Presidents usually prefer to have a free hand under the tense circumstances of diplomatic crises.

WELL, WHICH will it be—a special session or not? War clouds are getting blacker every day. The demands of the reformers are getting more insistent. On one side the Left Wingers are yelling into the President's ear for action—*now!* They tell him he'd better get on with his program while the getting is good, or go down in history as the President who marched up the hill and then marched down again.

The President is inclined to agree with them, but the State Depart-

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South Dakota Telephone Association, Hotel Cataract, Sioux Falls, September 28 and 29.

Telegraph and Telephone Section, Association of American Railroads, The Medinah Club, Chicago, October 5, 6 and 7.

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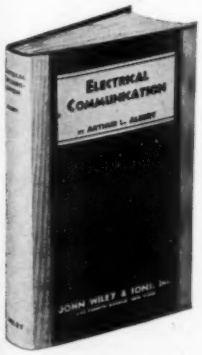

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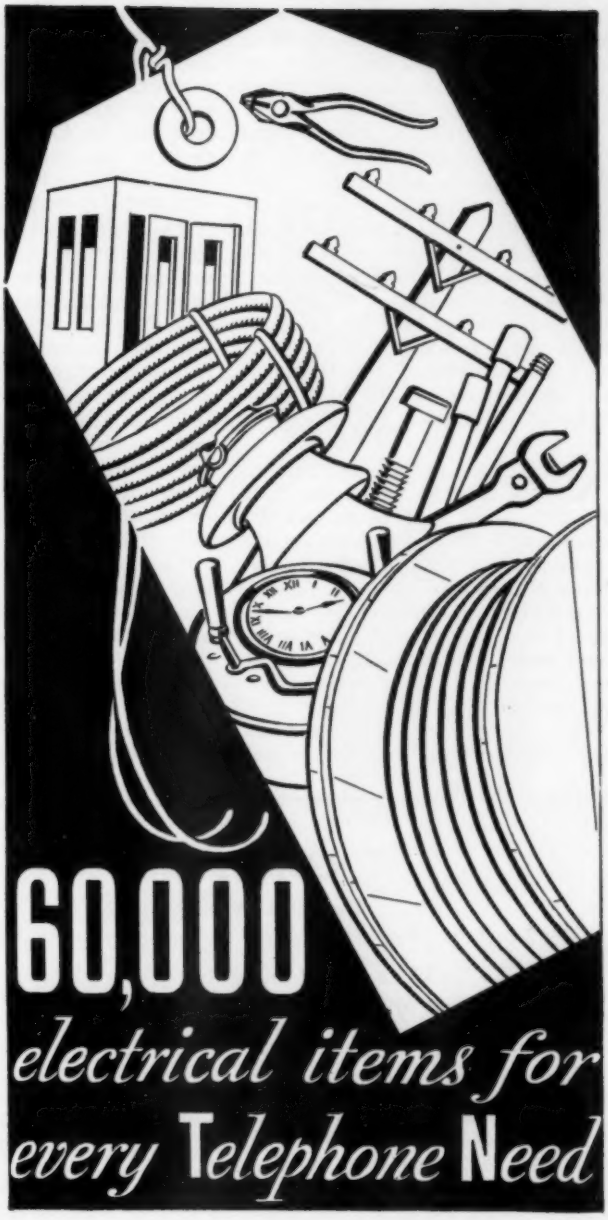

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ment, headed by Secretary Hull, in whom the President has utmost confidence concerning foreign affairs, is begging him to keep Congress home at all costs—at least until things abroad have quieted down.

Which way will he turn? The President himself is obviously undecided. Therefore, it would be presumptuous for anyone else to attempt any forecast. The present outlook would seem to tip the scales in the direction of the State Department and no special session. If the foreign crises should cool off, however, before next winter sets in—well, don't be surprised if the President calls the boys back to the grindstone ahead of schedule.

NEEDLESS to say, the fate of those bills in which the telephone industry may be collaterally interested depends somewhat on the President's decision. The White resolution to investigate the radio industry and the FCC will probably be approved by the Senate, whether a short session is called or not. At least, that is this department's present judgment on the matter.

Then there is the Indiana Senator's (Minton) bill (S. 2410) to prohibit Federal courts from restraining the enforcement of rate cut orders where *prima facie* evidence based upon original cost valuation estimates do not show a clear-cut case of confiscation. This bill will probably be lost in the shuffle if there is no special session. Otherwise, it may get to a vote; if so, it will probably be passed.

There is no way of telling in advance whether the general tax revision bill—which Congress simply must consider, special session or no special session—will give the public utilities, or the telephone industry in particular, any special attention. The electric industry has already been plastered with a 3 per cent Federal tax on all retail power bills, but the telephone and gas industries have so far escaped special levies, except the tax on telephone toll calls.

Your correspondent has no definite knowledge that the Treasury is investigating this particular possibility of additional government revenue, but it is safe to predict that the Treasury will not be overlooking very many possibilities when the new revenue act is being drafted.

The state public utilities commissioners are meeting for their annual convention this week in Salt Lake City. If the rumors reaching this writer have any foundation in fact, there are going to be things said there by state commissioners which should make Federal REA's ears burn.

This department has previously commented upon the Federal REA's policy of attempting to have the rural electric cooperatives escape state commission regulation whenever possible, and bullying state commissions into taking orders from Federal REA when such evasion is not possible.

The blast delivered by REA Chief Carmody two weeks ago against the Massachusetts commission for daring to question the economic soundness of a certain rural co-op proposition (known as the Tri County project) is reported to have most of the New England commissioners fighting mad.

It seems that the Bay state commission failed to see any distinction between a rural electric cooperative and any other kind of an electric utility. That is to say, it thought the rural co-op should comply with the same regulations for sound capital structure, safe operating practices, and so forth, that the commission has been applying to other power utilities these many years.

So it looked into the Tri County project and decided that it was too shaky a proposition financially to be allowed to do business in conservative Massachusetts. And so it turned down the Tri County application with quite a lecture.

THIS ALL HAPPENED several weeks ago, but it took the Federal REA all the intervening period to grasp the audacity of the commission order. When the reply came, however, it certainly didn't suffer from restraint. Here is a sample passage from Mr. Carmody's letter:

> Your (Massachusetts) Department . . . appears to have acted under the impression that these farmers were intent upon founding a new utility empire. They must be heedful of the "established rights" of certain utilities; mindful of the advantages of "regulated monopoly." They must not start with only a "meager capital" of $25,000.
>
> They must—if they regarded the plain implications of the decision—sell stock in an amount somewhere between $127,500 and $255,000 before borrowing from their Government, lest their borrowings outrun their paid-in share capital and they be plunged headlong into inflation. They must meet "regulatory standards" of service, to say nothing of following quite an array of rules which statute and regulation and

CONFIDENCE

By MISS ANNE BARNES

Traveling Chief Operator, Iowa Independent Telephone Association, Des Moines, Iowa

SOME PLANTS are very difficult to grow no matter how particular one is in caring for them. If they mature in proper time one feels repaid for all the care given them.

Confidence is a plant of slow growth. Some people confide their most personal affairs with anyone who will listen, often to their own regret and eventual embarrassment. They do so as easily as they would place a tender plant anywhere in the ground without considering the proper soil, or whether it would get too much sun or shade.

We should be careful how and with whom we place our confidence. If we do not feel that a person is safe enough to confide in entirely it is better not to tell just a part of a thing, because this shows we do not fully trust that person. Thus, we are not treating that person fairly.

Some people are so glib in their praise of everybody, however slightly they know them, that they seem too shallow for us to take into our confidence. *Too much sun* is not good for any kind of a plant. Nor do we feel sure or safe placing our confidence in folks who are very free in censuring their relatives, friends or business associates. *Too much shadow* molds certain plants including misplaced confidence.

Sometimes we place our confidence in people who accept it in good faith but soon betray our trust.

This is a sort of sermonette, isn't it? I hope it isn't misplaced. Just think how many people place their confidence in us—as telephone people—whenever they use their telephones.

MORAL: "Society is built upon trust, and trust upon confidence in one another's integrity."

quasi-judicial determination have evolved from years of experience with regulated utility monopoly.

Having sought REA aid for about two years, worked actively on plans for their project for a year, and run the gauntlet of department hearings at which utility men professedly unable to serve them were quite able to cast discredit upon their plans to serve themselves, they must come back for authorizations — preceded by public hearings —to operate in each of 28 small towns.

Thereafter—if the farmers had meanwhile raised the $127,500 to $255,000 of share capital, and if your Department had resolved its indicated doubts that REA can function in Massachusetts—any farmers who were still living might run power lines into their barnyards.

That, in stark outline, is the concept of the Tri-County project which your Department's decision reflects. And it is one which must make the establishment of electric service, for the 40 per cent of Massachusetts farmers who are denied service, difficult if not impossible. I cannot dismiss such a concept without comment because potentially it has too much bearing upon the future of rural electrification, not merely in Massachusetts but in other parts of our country.

And note the following ominous threat to stop all further Federal loans for rural power lines from flowing into Massachusetts unless the state commission "accommodates" its view to suit REA:

As to our own course, with respect to the Tri-County project, we shall accept your decision without reservation. Regarding possible future projects, of course if any group of Massachusetts farmers wishes to borow from us, we stand ready to lend. Manifestly, however, there would have to be an accommodation of views between your Department and REA before any project would have a chance of getting established.

Though some lawyers have felt that we should appeal the Tri-County decision in the courts, we recognize the legal adjudications are uncertain and time-consuming. More important, all our experience indicates that the future of rural electrification lies not with the courts but with the farmers who want service and with those—whether in the Government, the cooperatives, the private utilities, or the state utility commissions—who are, or should be, helping them to get it.

If the sort of objections your Department has raised to the projected electrification of Franklin county cannot be removed by concerted action among all of us who are working to take power to the farms, then they cannot be removed at all. We believe they can be removed, and our experience with scores of projects in many states, so far as we have gone, gives confirmation to our belief.

And just by way of giving the legal profession a good sharp crack over the knuckles for looking up the wrong kind of law on a rural electrification project, note the subtlety of this concluding paragraph:

When commissions go in the other direction, subjecting electric service cooperatives or kindred corporations to a cumbersome regulation which was designed for an altogether different kind of undertaking and is not adapted to their needs, the only outcome is futility. After all the expert computation, the weighty testimony, the learned argument, and the carefully-studied decision with its aftermath of shattered plans and hopes, the net result might be summed up in the ironic witticism: "The operation was a success but the patient died."

Mr. Carmody had earlier referred ironically to the commission order "in all its perfection of cited statute upon cited statute and precedent upon precedent." Lawyers, who have been working on the Independent telephone companies' legal rights to damages resulting from inductive interference by indiscriminate rural power line construction, can appreciate this display of REA'S impatience with the wrong kind of citations.

Taken all together, Mr. Carmody's letter is truly an unusual official document. It should go a long way towards making the state commissioners realize the dignity of a Federal government and the deference to be accorded its slightest wish.

What is puzzling some Washington observers, however, is how REA expects to complete its difficult national loan program if it keeps walking out of states wherever the local authorities displease it. Is it possible that REA is already preparing an alibi, in the event of a collapse of its program, that will shift the blame to the state commissions? That is what the state commissioners are talking among themselves this week at Salt Lake City. But what will they do about it, if anything?

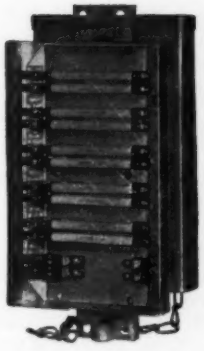
P. S. Postmaster Farley says that none of the rebel Senators will be read out of the Democratic party; but it doesn't seem to read that way in Guffey's Reader.

▼ ▼

Colorado Firemen Learn To Operate Switchboard

Firemen at the central station in Colorado Springs, Colo., have become "hello girls," each having spent a portion of his time becoming familiar with the buttons and keys on a new switchboard installed recently. The new switchboard gives direct lines to the light and power department, police depa tment, all outlying stations and the residences of the chief and assistant chief.

The switchboard is not as simple as the old one, according to Chief Fred A. Taylor, but is much more versatile. The direction of the other fire companies will be greatly speeded up by its use.



S-X 4, 5 or 6 Pairs

NO. S-X TERMINAL

The Cook S-X is a 4, 5 or 6 pair terminal for the spots where you require just a few subscribers' drops. This small protected terminal offers you real economy. It has the same perfect means of terminating your cable, the same type of insulation and protection and the same drop wire connections as are found in the universally known Cook S-6.

COOK ELECTRIC CO.
2700 Southport Ave. Chicago

Always Specify
COOK
PROTECTION

Independent Telephony Goes "On the Air"

IN RADIO BROADCAST during Farm and Home hour of NBC to 88 stations, informational matter is given regarding Independent telephony. Louis Pitcher, executive vice-president of United States Independent Telephone Association, presents much information of interest to public when interviewed by NBC announcer. Text matter of interview reproduced in full

INDEPENDENT telephony was "on the air" Tuesday noon, August 24, during the Farm and Home hour of the National Broadcasting Co. Broadcast through 88 stations, this program hour has an estimated maximum audience of 32,000,000 listeners and a probable audience of one-tenth that number. The telephone broadcast was on the 2,737th program of the Farm and Home hour.

Many requests have been received by the United States Independent Telephone Association for copies of the transcript of the interview of Louis Pitcher, executive vice-president of the association, by Helen Stevens Fisher, the NBC announcer. As the text matter contains much that may be of interest and use to Independent managers, it is published in full.

Text of Independent Telephony Broadcast

ANNOUNCER: How do you do, everyone. The basket today brings you a spokesman for an ingenious invention that reaches out to and covers practically the four corners of the earth. And this same modern device that ties New York with San Francisco, England with the United States, is just as important to you in the country when you want to reach your neighbor five miles away or your family in the city.

And now you've guessed that our guest represents the telephone, that modern instrument which brings the far corners of the world so close together. His name is Louis Pitcher, executive vice-president of the United States Independent Telephone Association. First, Mr. Pitcher, will you tell us just what is the United States Independent Telephone Association?

LOUIS PITCHER, Chicago, Ill., Executive Vice-President of the United States Independent Telephone Association, in a Radio Interview by NBC Announcer During Farm and Home Hour, Presented Much Interesting and Informative Matter Concerning Independent Telephony.

MR. PITCHER: It is a national association of Independent telephone companies.

ANNOUNCER: Independent telephone companies?

MR. PITCHER: Yes. They're telephone companies *not* controlled by the American Telephone & Telegraph Co., or any of its subsidiaries; in other words, not controlled by the Bell Telephone System.

ANNOUNCER: You know that sounds rather odd, for so many people think there just isn't any telephone company but the Bell.

MR. PITCHER: Yes, but there is. We represent 6,500 Independent telephone companies in the United States. We operate 12,500 telephone exchanges of the 19,200 in the nation and are responsible for four million telephones.

ANNOUNCER: Well, that's real news to most of us. Where are your companies situated?

MR. PITCHER: All over the United States, in every state in the Union, although we are stronger in the Middle West and West than in the East.

ANNOUNCER: Do you have long distance lines, too?

MR. PITCHER: Oh, yes. We give world-wide service through connections with the "Bell Telephone System" to Switzerland—down to the southernmost tip of South America; and, in general, we bring the farthest ends of the earth to you. Incidentally, service to Shanghai, China, has been suspended temporarily because of the military situation.

ANNOUNCER: Which goes to show how war does separate one country from the other. And just what does your association do?

MR. PITCHER: Our efforts are so diversified it would take too much time to even touch upon them briefly, but it occurs to me that one of our recent activities has resulted in the reduction of farm fire insurance rates by 10 per cent, where certain conditions are met by the farmer, one of which is to have telephone service. You see, having a telephone does reduce the fire hazard tremendously.

ANNOUNCER: Of course, it does. And I'm anxious to learn what more a telephone can do. Just how many telephone calls are made each day in the United States? Can you answer that?

MR. PITCHER: Indeed, I can. In 1936 the average number of calls completed each day in the entire country was 81,500,000. That includes local and long distance calls.

ANNOUNCER: That's a lot of calls, isn't it?

MR. PITCHER: Yes, it is. And it requires a lot of teamwork, too. Even the simplest call requires the cooperation of at least two persons. Other calls may require as many as eight, some of whom the subscriber never hears, but they are there, doing their part to get the message through. The subscriber, too, is an important member of the team.

ANNOUNCER: How can he best cooperate?

MR. PITCHER: With good telephone manners. There was a time when the only way we could talk to someone a few miles away was to hitch up and drive over. Now the telephone does the work in a fraction of the time. The chances are 99 out of 100 that the call will be completed accurately.

ANNOUNCER: That's pretty accurate work, I should say—to miss only once out of 100 times.

MR. PITCHER: We think so, too. But the telephone works so perfectly that persons are sometimes inclined to be annoyed at the 1 per cent of error when, for some reason, it doesn't work. Every telephone employe is trying to cooperate with the subscriber. If the user will remember this, and cooperate by practicing good telephone habits, he will find that he gets better and faster service.

ANNOUNCER: Good telephone habits—what are they?

MR. PITCHER: Here are a few I might suggest: Answer promptly. Identify yourself. Don't use the word "Hello"; it is out of date. It is so much better to say, "This is the Jones residence," or answer by giving your telephone number; it saves time and is also good telephone courtesy.

Then speak directly into the mouthpiece with your lips about one-half inch from it.

Be courteous; you can create any impression you desire over the telephone, so why not a pleasant one.

Talk clearly, and as loud as in an ordinary conversation.

If you are not certain of a number, look it up before you call. This may save calling a wrong number and being an unnecessary annoyance to others.

ANNOUNCER: I'm going to remember those. And now tell us what do people in rural communities use their telephones for mostly?

MR. PITCHER: One thing is to get in quick contact with other farm neighbors; and second, as a means of protection for the family when the farmer is not at home. As one farmer said: "To take the telephone away from my children would be like taking away their friends. They use it a lot for visiting, and so does my wife. As a matter of fact, so do I.

"Then there's the matter of protection. When I have to be away all day, I feel safer to know that my family is protected by a telephone. I wouldn't want them to spend a night alone without one."

ANNOUNCER: And didn't you say your Independent telephones connect with the Bell Telephone System?

MR. PITCHER: Yes, nearly all of them are interconnecting. In fact, present-day telephony is such that nearly any telephone can be connected with any other telephone on earth. The telephone user in the United States can reach more than 32,000,000 telephones, or more than 93 per cent of all the telephones in the world.

ANNOUNCER: Then the telephone speaks practically every language under the sun? What about these globe-circling calls? Are they hard to make?

MR. PITCHER: Not at all. All you need do is call the long distance operator, tell her whom you want and where in the world they may be found.

ANNOUNCER: What country has the most telephones per population?

MR. PITCHER: The United States. We have 14 telephones for every 100 persons. Canada ranks next with 11 for each 100 persons. Washington, D. C., and San Francisco have a telephone for every three people.

ANNOUNCER: What portion of the world's telephones are in the United States?

MR. PITCHER: Nearly 50 per cent; to be exact, 49.74 per cent.

ANNOUNCER: That's almost the controlling interest, isn't it? And now tell us, Mr. Pitcher, what is the outstanding characteristic of the telephone industry?

MR. PITCHER: I'd say it is the spirit of service and cooperation. This is the spirit that keeps the lineman, the repairman and the trouble-shooter out in all kinds of weather, constantly combating trouble in order that you may be able to get your call through.

This is the same spirit that inspires the operator to go to the central office during a blizzard, or to stick to her position during fire or flood or other disaster. This spirit has resulted in many cases of heroic devotion to public service. And it has, incidentally, given our country the best telephone service there is in the world today.

ANNOUNCER: Thank you, Mr. Pitcher. You have given us many reasons for just pride in this great network of service that surrounds us and brings us all closer together. Thank you. I hope you will come again to see us.

Answers to Traffic Questions on Page 18

1. A tributary is an office, some or all of whose toll traffic is handled and timed by another office known as a toll center. If the toll center operator rings the numbers at the called place it is termed a "tributary." If there is an operator at the tributary point and she is reached by way of ringdown trunks, the called place is termed a "ringdown" tributary.
2. Accept the name given and enter it on the ticket.
3. The proper TX operator at the terminating toll center.
4. If the calling party does not agree to pay for the call and requests the operator to hold the call until later, the operator will tell him that if such action is taken, it will be considered as a new call. If he still wishes to have this action taken, the operator will cancel the original call and write a new ticket.
5. The phrase, "Mr. (called party's) number is (number) if you care to make a note of it," has been discontinued. In a large percentage of cases the calling party is holding the line and hears the number and is in a position to make a note of it if he wishes to do so.

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Houston, Texas, Reports Substantial Telephone Gain

The city of Houston, Texas, installed 5,042 new telephones during the first seven months of 1937, it was announced recently by Fisher Adams, district manager for the Southwestern Bell Telephone Co. Telephones installed in three other Texas cities during the same period were: Dallas, 2,469; Fort Worth, 1,456 and San Antonio, 1,006.

Houston's total, Mr. Adams pointed out, exceeded the combined figure for Dallas, Fort Worth and San Antonio by 111 telephones.

He said that the new telephones reflected the growth of the city and that the established Houston average of one telephone to each 4½ persons indicated that the city's population had increased at least 20,000 since the first of the year.

Mr. Adams also said that Houston's present total of 84,272 telephones was the highest for any city of the South, as well as in the state.

Here and There in the Field

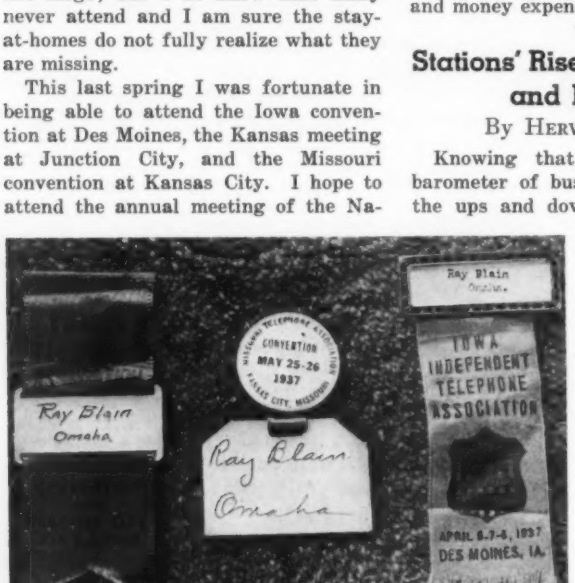
"I Wonder Why" of a Telephone Engineer

By Ray Blain

"I Wonder Why" more telephone people do not profit by attending the annual convention of their state telephone association?

I do not intend to infer by this that the attendance at these conventions is not large; but I do know that many never attend and I am sure the stay-at-homes do not fully realize what they are missing.

This last spring I was fortunate in being able to attend the Iowa convention at Des Moines, the Kansas meeting at Junction City, and the Missouri convention at Kansas City. I hope to attend the annual meeting of the National association in Chicago the middle of next month.



Badges Received While Attending Three State Conventions This Year Were Mounted by Ray Blain to Remind Him of the Pleasant and Profitable Time Spent at Kansas, Missouri and Iowa Meetings.

One feature I always enjoy at any convention is the manufacturers' exhibits. The latest telephone equipment is always on display, providing opportunity for anyone interested to keep up-to-date. Often a demonstration of equipment will indicate where some of it can be used to advantage and save money in a certain exchange. The manufacturers provide these exhibits at considerable expense, and we should all endeavor to profit thereby.

The meetings with addresses by men prominent in the industry are always instructive. From a plant man's point of view, I especially enjoyed the telephoto demonstration at Des Moines; also the open forum session where numerous power interference and construction problems were discussed.

In my opinion more time should be devoted to these open discussions—perhaps a night session—for they always bring out numerous, interesting angles, showing how difficult problems are met and solved in the Independent telephone field.

The lecture and demonstration on "Rural Electrification and Telephone Service," at the Missouri convention, was especially interesting. Numerous other lectures at each of the conventions were of equal interest to commercial and traffic people.

The Independent telephone convention, it seems to me—and I am sure I am right—repays many times the effort and money expended in attending.

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Stations' Rise, Fall and Rise in 16 Years

By Hervey W. Laird

Knowing that there is no better barometer of business than graphs of the ups and downs of telephone patronage, I sat in with William F. Cook, manager of the Peninsular Telephone Co. at Lakeland, Fla., for a look over the route traveled since he became local manager 16 years ago.

What we found was interesting to him as a telephone executive and to me as a student of business affairs. Having served as manager of the local chamber of commerce while Mr. Cook was president, he and I have found it worthwhile to continue to study economic and other city and county reactions.

When Mr. Cook took charge of the local plant in April, 1921, there were 1,482 stations, which had become 2,536 by July, 1924, when the first rumblings of the real estate boom of the following three years were becoming manifest. There had been a record of month-by-month increases from 1921 to 1924, and this kept up to the middle of 1926, when the real estate boom took its disastrous nose-dive.

While the year 1926 maintained the up-and-up habit by bettering the totals of 1925, it marked the beginning of a dropping-off that was not definitely halted until 1934, when 2,606 stations brought the business back to a nice increase over the generally wholesome year 1924.

In the experience of the telephone company from July, 1924, to July, 1937, as shown in numbers of stations, the citizens as well as telephone officials get a picture of the rises and falls of the community possible, perhaps, in no other way. Here are the figures:

Year	Total Stations	Year	Total Stations
1924	2,536	1931	2,807
1925	3,306	1932	2,646
1926	4,046	1933	2,571
1927	3,787	1934	2,606
1928	3,028	1935	2,735
1929	2,788	1936	2,966
1930	2,805	1937	3,201

The influence of the real estate breakdown made itself felt from 1926 to 1929. For two years after that, the showing improved until the national panic of 1929-30 slowed things up until 1934, when there were 35 more stations in Lakeland than in 1933. The recovery which began that year has been reflected in constantly-increasing annual gains, although totals are yet behind the three years ending with July, 1927.

Because 1937 business in Lakeland is on a sound and safe foundation and is free from the inflated situation in 1925-26, business leaders and citizens generally are showing confidence by investments in new and improved construction and enlarged outlook. Keeping this kind of step the Peninsular Telephone Co. has made many expensive, service-increasing outlays.

One of these expenditures has involved the laying, during the last 24 months, of 23,260 feet of underground cable at a cost of approximately $25,000. This improvement is booked for a considerable increase for the next two years. The company's new, four-story building, occupied in 1925, and automatic operation which was inaugurated in 1926, have been augmented from time to time to fit into enlarged public demands.

Payrolls of the Lakeland employes are back to the peak of local plant history and the personnel is larger than at any time since the cutover to automatic equipment. Contributing to this favorable condition is larger use of service and far better collections than even in the boom days of 1925-26. Local Manager Cook says that in the sagging periods the company was

not hurt as badly as some other Florida public service units.

"Our confidence in Lakeland and its future led us to keep up every original plan to meet additional needs of the public," declared Mr. Cook. "And we feel that bright as the picture is from 1921 to 1937, it will be far better for the next ten years. I am sure that from now on Lakeland will outdistance its own record of progressive advancement, and that will be going some."

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Teach Diction to Foreign-Born With Aid of Telephone

The telephone has become a part of classroom equipment in Schenectady, N. Y., public evening schools. It is being used to reveal to members of adult English classes their faulty accents. In the course of instruction in proper diction, pupils talk to each other from different classrooms or even from different schools. This avoids all possibility of lip reading and makes gestures useless. Pupils must make themselves understood solely by their voices, not by loudness of tone but by clear articulation.

It is usually arranged that those of one nationality converse with those of another nationality, for people with similar accents can understand each other's broken English.

As these foreign-born people struggle to make their messages understood, they begin to realize that it is their peculiarities of that speech that bother their listeners. Perhaps they can understand the spoken word fairly well, but they do not always realize that they cannot talk well. Not until the telephone has revealed this language difficulty do they begin to strive to overcome it.

▼ ▼

Railroad Telegraph-Telephone Meeting

The telegraph and telephone section of the Association of American Railroads will hold its 19th annual meeting in Chicago at the Medinah Club October 5, 6 and 7. Reports will be given by the various committees on outside plant, inside plant, communication transmission, research and development, new devices and material, communication plant operation and inductive co-ordination.

"Line Wire Joints" is the subject of a paper to be given by a representative of the Western Union Telegraph Co.

A representative of the American Telephone & Telegraph Co. will present an address on the "Practical Application of Telephone Repeaters and Carrier Telephone."

"Some Interesting Outside Plant Topics" is the topic to be discussed by a representative of the A. T. & T. Co., while a representative of the Western Union Telegraph Co. will give a talk on the "Transaction of Commercial Telegraph Business at Railroad Station Offices."

J. M. Symes is vice-president of the operations and maintenance department. The officers of the telegraph and telephone section are as follows: Chairman, W. A. Jackson; vice chairman, D. E. Galloway, and secretary, W. A. Fairbanks.

Headquarters of the Association of American Railroads are located at 30 Vesey Street, New York City.

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Telephone Signs Aid Motorists in Washington

Numerous compliments have reached the district offices of the Pacific Telephone & Telegraph Co., Seattle, Wash., over the placing this summer of white arrow signs along the state highways, indicating the nearest telephones.

These arrows have been placed at the locations of public telephones and in many cases at the crossroads, pointing to the distance to the next telephone. The program was adopted chiefly in the interest of the traveling public, according to the company officials.

▼ ▼

Effective Sales Appeal For Residence Service

The five most effective sales appeals in selling residence telephones, as set forth in Public Service, house organ of the Central Electric & Telephone Co., Sioux City, Iowa, are:

(1) Saving of time and money; (2) contacts with friends and relatives; (3) protection of family and property; (4) privacy and convenience and (5) opportunities for finding employment.

It is suggested that those engaged in selling telephone service refrain from arguing with the prospective customer or from making general statements. Instead they are urged to ask questions designed to bring out the prospect's interest in his specific need for service. When interest has been shown in a sales appeal, it is well to stress the point.

It is emphasized that every telephone salesman should be ready with specific illustrations of instances in which the telephone has been used in the community to protect life or property.

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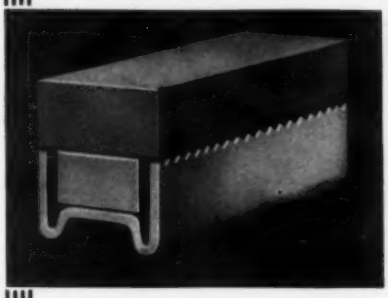
New Hampshire Convention to Be Held September 8-9

A two-day meeting will be held September 8 and 9 at Hampton Beach, N. H., by the Telephone Association of

Reliable



SAWTOOTH DISCHARGE BLOCKS

The P-495 self-cleaning ground blocks, eliminate dirty carbon troubles. They dissipate static discharges with no time lag and do not ground the line unnecessarily.

This discharge block has been on the market for many years and has thousands of friends who testify that it reduces service interruptions and lowers maintenance costs.

Approved by Underwriters' Laboratories.

Reliable ELECTRIC COMPANY
OVER 25 YEARS SERVICE TO THE UTILITIES

New Hampshire. Headquarters will be at the Hotel Ashworth. Whether a member of the association or not, every telephone official, manager, plant man and operator is especially urged to attend this meeting for which a special program has been arranged.

Mrs. Bernice M. Rines, of Laconia, is secretary of the association.

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Real Telephones Used in Radio Programs

By Charles W. Geiger

Among the sounds frequently heard in radio programs are telephone conversations in which actual telephones are used, together with numerous special devices made especially for producing various sound effects, such as that of placing a nickel in the slot in a pay station, the sound of the bell ringing after the nickel has been deposited, and the sound of the voice of the person answering the telephone.

A talking-back device is used in producing the sound of the second person in a radio telephone conversation program, and a conglomeration of slides, springs, slots made of tin and a bell are used in simulating the sound of the dropping of a nickel in the slot of a telephone pay station, for the real device makes too much sound for radio programs.

In the San Francisco studio of the National Broadcasting Co. are all types of telephones which are maintained in the "Sound Effects" room, ready to be used in any radio program requiring sounds for a telephone conversation. All of these sounds of telephones are produced by Sound Technician James Lyons and his assistants, and considerable pains are taken to make the sounds realistic and properly timed.

WALLACE RUGGLES, Assistant Sound Technician of the National Broadcasting Co. in San Francisco, Calif., Ready to Drop Nickel in Sound Device at Exact Time Specified in Script During Radio Broadcast.

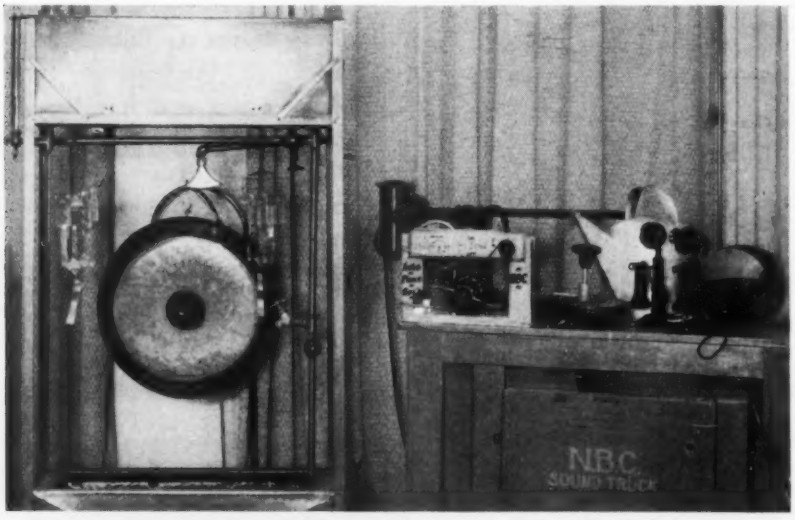
When the script for a program calls for a telephone conversation, a copy of the script for that program is given to the sound technician sometime before the broadcast with a notation regarding the telephone conversation. Several minutes before the actual conversation, one of the sound technicians will be seen standing near the microphone with a telephone in hand, while another will be seen stationed at the sound truck upon which is placed a box containing buzzers and various kinds and types of telephone bells.

If the script calls for sounds of an actor dropping a nickel in a pay station type of telephone, then the sound apparatus designed for that purpose is also placed on the sound truck. A few seconds before the telephone call is to be made in the radio program, a sound technician will be seen in the broadcasting studio, holding a real nickel above the coin slot.

At the exact time indicated in the script, he drops the nickel into the slot and, after the proper time has elapsed, presses a button on the box containing the various kinds of telephone bells and the bell will resound. Another technician then removes the receiver from an actual telephone which he holds some distance from the microphone and the actor begins the telephone conversation. In many instances the sound of the voice of the person supposedly at the other end of the telephone line is heard by means of the talk-back device.

At the conclusion of the telephone conversation, the sound technician places the receiver back upon the switch hook and very quietly tip-toes away from the microphone with the telephone and the sound apparatus and, perhaps, prepares to repeat the sounds in some other program to be broadcast from another studio a few minutes later.

One of the accompanying illustrations shows Assistant Sound Technician Wallace Ruggles ready to drop a real nickel into the slot of a pay station. The other shows some of the telephones used in radio programs as well as other devices used in producing authentic sounds.



View of Some of the Telephones Used in Radio Programs at the NBC Studio in San Francisco, Together With Other Devices Utilized in Producing Authentic Sounds.

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Private Telephone Line Connects Air Bases

Work on a private telephone line between the Valparaiso, Fla., airport, the bombing and gunnery base and White Point was completed in late July.

The line covers a distance of 20 miles with a double metallic wire. A copper wire line had also been strung for long distance calls. This line is hooked up with the local exchange of the Southeastern Telephone Co.

A private switchboard has been installed at the airport which will operate between these three army posts. All long distance calls will be received at the airport exchange and connected with the individual telephones. Approximately 20 telephones have already been connected and are now in operation.

This private line was built to relieve the congestion now over the Southeastern company lines, which are overcrowded. The line extending to Fort Walton, Mary Esther, and Florosa, which also leads in at the airport, has 41 private and pay station telephones connected to it.

Commission and Court Activities

Time Extension to Company In Oklahoma City Case

The Oklahoma Supreme Court on August 11 granted the Southwestern Bell Telephone Co. an extension of time to September 17 in which to file a reply brief to the Oklahoma Corporation Commission's brief defending a yearly $120,000 reduction in Oklahoma City telephone rates. (TELEPHONY of August 28, page 28.)

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Craven Takes Oath as FCC Member

The oath of office as a member of the Federal Communications Commission was taken August 25 by T. A. M. Craven. He fills the vacancy caused by the resignation of Dr. Irvin Stewart. Mr. Craven was sworn in by Miss Pansy Wiltshire, a notary in the office of Secretary Thomas J. Slowie.

Commissioner Paul A. Walker was present, as were also Chief Accountant W. J. Norfleet and William Massing, chief of the commission's license bureau.

The other new member of the commission, Frank R. McNinch, chairman of the Federal Power Commission, is expected to take up his duties as temporary chairman of the FCC about the middle of this month.

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Re-enactment Looms of Ohio Utility Surtax

Just when the public utilities in Ohio, including telephone companies, were beginning to feel that they would be relieved at the close of this year of the 1 per cent surtax which they have been paying, the possibility looms of the reenactment of the law creating the tax at a special session of the legislature to be called either in September or October.

Governor Martin L. Davey has given a number of the larger cities of the state assurance that he will call a special session at an early date to consider the matter of devising ways and means for raising funds with which to carry on some type of program for poor relief.

Last week a joint meeting of committees of the Senate and House was held in Columbus to discuss possible means of raising poor relief funds, and one of the suggested plans was the reenactment of the 1 per cent surtax on utilities.

Just how far the proposal will get if submitted to the legislature at the special session remains to be determined. A no-new-tax bloc in the Senate, and which had the majority in that body, has indicated it will prevent any new taxes at the coming special session.

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Dentist Asks Damage For Directory Omission

Dr. Willard Ogle, dentist in Dallas, Texas, has filed suit for $2,800 damages against the Southwestern Bell Telephone Co. for alleged failure to list his office telephone in the last telephone directory. The suit was filed in Judge Paine L. Bush's Court.

Dr. Ogle claims his earnings dropped from $1,100 in April to $358.28 in June.

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Ohio Independents Protest Handset Ruling

Action of the Ohio Public Utilities Commission in its order of August 16 directing Independent telephone companies of the state to reduce from an unlimited period to two years, the 25-cent monthly charge for handset telephones has already brought some protests from companies that will be affected by the order.

The opinion prevails that if the commission finally makes the order effective on October 1, as it has indicated, this will be followed by additional applications of Independent companies for authority to increase their rate schedules.

Many of the companies, at the present rates for which they are now rendering service, are making a very narrow margin of profit if any on their investment and it is claimed that by limiting the time to two years on a special charge for handsets their revenues will be further reduced.

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Rate Increase Granted Wisconsin Companies

The Wisconsin Public Service Commission on August 11 authorized the Commonwealth Telephone Co. to increase its rates $260 a year at its Lac du Flambeau exchange, but was ordered to give 24-hour service by September 1. The company proved, to the commission's satisfaction, that a fair return had not been earned at the exchange in 1936 on the basis of its present rates.

(Please turn to page 37)

Crapo Galvanized Telephone Wire is drawn from iron, and steel, of special analyses . . . . scientifically processed under direct laboratory supervision . . . . extra galvanized by the *Crapo* Patented Process. Each grade and size is produced in accordance with the most rigid specifications and laboratory-inspected for correct results. This exactitude in manufacture, backed by years of experience and research, insures galvanized line wire which meets every requirement for electrical conductivity, tensile strength, ductility and durability.

Readily available from representative jobbers in the following grades: E. B. B., B. B., Steel and *Crapo* HTL-85 High-tensile, Low-resistance Line Wire. Consult the nearest distributor, or write direct!

TELEPHONE WIRE
STEEL STRAND
●
INDIANA STEEL
& WIRE CO.
MUNCIE, INDIANA

Personal Notes About Telephone Men

CALVIN P. RUSSELL, for many years secretary and treasurer of the Lincoln (Neb.) Telephone & Telegraph Co., celebrated with Mrs. Russell the 50th anniversary of their wedding with a public reception on the evening of August 31, at the First-Plymouth Congregational Church, which he has served in various official capacities for years. The reception was attended by a large number of friends, including many of his associates in the company.

▼

C. E. PLAMADORE, who served as district manager for the Northwestern Bell Telephone Co., Des Moines, Iowa, for the past five years, has been made a member of the general commercial manager's staff. He will continue to live in Des Moines. From 1926 to 1929 Mr. Plamadore was manager for the company at Des Moines. Prior to that time he was manager at Oelwein.

▼

GUSTAV HIRSCH, prominent telephone engineer of Columbus, Ohio, and president of the Ohio Independent Telephone Association, was featured in the colored cartoon section of the Columbus Sunday Dispatch, of August 15. Under the heading "Interesting People" is reproduced the cartoonist's sketch of Mr. Hirsch and the bugler who is calling everyone to attention for the introductory address:

"We have with us today Gustav Hirsch, chairman of the committee on drum and bugle corps contests which will be one of the highspots of the state convention of the American Legion that is being held here today. Lieut. Col. Hirsch is a veteran of the Spanish-American and World wars."

▼

THOMAS TYSON COOK has been appointed assistant vice-president of the American Telephone & Telegraph Co. in charge of advertising. Mr. Cook has been national advertising manager of the A. T. & T. Co. since 1927.

Mr. Cook graduated from old Central High School, Harrisburg, Pa., in 1904, and entered the employe of the Pennsylvania Telephone Co., predecessor of the present Bell Telephone Co. of Pennsylvania, as a clerk and traffic inspector in 1907.

After working there several years, Mr. Cook was transferred to the Philadelphia offices of the company, and while there he was made assistant editor of the Telephone News, a company publication. About 1912 he went to Baltimore and to found as editor, The Transmitter, the publication of the Chesapeake & Potomac Telephone Co. He went to New York in 1921 to establish and edit Long Lines, employes magazine of the long lines department of the American Telephone & Telegraph Co. He was made advertising manager of the company in 1927.

▼

GEORGE B. BUTLER, of Bryan, has been elected secretary of the Texas Telephone Association, with headquarters in Austin, to succeed H. M. Stewart, who resigned to become executive secretary of the Pennsylvania State Telephone & Traffic Association. For the past several months he had been employed in a legal capacity by the Texas association.

Mr. Butler was born and raised in Bryan, Texas. He was graduated from Louisiana College and studied law in the University of Texas, after which he practiced law for several years in Bryan. He served two terms in the Texas legislature as representative from his district.

Recently Mr. Butler was married to Mrs. Imogene Stuart Berson, of Texarkana, daughter of A. C. Stuart, a pioneer in Texas telephony. Her brother, J. E. Stuart, is vice-president of the Two-States Telephone Co. and a director of the association.

GEORGE BUTLER, of Bryan, Texas, Who Has Been Serving the Texas Telephone Association in a Legal Capacity for the Past Several Months, Has Been Elected Its Secretary, Succeeding H. M. Stewart.

Being a native Texan, Mr. Butler is in an excellent position to understand and competently handle the problems likely to arise in connection with Texas telephone affairs. He has a likeable personality and a friendly disposition.

▼

STEPHEN E. SLATTERY, Madison, Wis., district supervising foreman for the Wisconsin Telephone Co., completed 25 years of service August 1.

Mr. Slattery began his career in the telephone business August 1, 1912, as a clerk. Subsequently he served, successively, as timekeeper, inspector and supervising foreman in the state construction division of the plant department. On August 1, 1935, he received his present assignment.

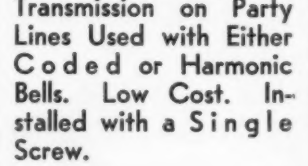
In recognition of the completion of 25 years of service, President William R. McGovern presented him with a diamond service emblem.

▼

W. C. ALLEN, publisher of the Dakota Farmer and a resident of Aberdeen, S. D., has been named as a director for the Northwestern Bell Telephone Co. Mr. Allen has been associated with the publishing business for 35 years and is one of 16 directors living in the five states the company serves.

Entirely NEW in Telephony!

VINCENT RARE GAS RELAY



Improves Ringing and Transmission on Party Lines Used with Either Coded or Harmonic Bells. Low Cost. Installed with a Single Screw.

Its Many Advantages Are Shown in Our Descriptive Folder RTC-1

L. S. BRACH Mfg. Corp.

Newark, N. J. BRACH Est. 1906

Makers of Rare Gas Lightning Arresters, Test-O-Lite, Etc., for 30 Years

Obituaries

ERNEST WALTON SWARTHOUT, Aurora, Ind., president and founder of the Southern Indiana Telephone Co., passed away at his home in Aurora on Sunday, August 8. He was 71 years old at the time of his death.

Funeral services were conducted Tuesday afternoon, August 10, at the family residence on Broadway street with burial in Riverview cemetery.

He is survived by his widow and a son, Walton.

▼

ROGER S. DAYTON, plant employe of the Cincinnati & Suburban Bell Telephone Co. for 27 years, was found dead by his wife in his automobile July 30, apparently from carbon monoxide gas. The radio and the ignition of the car were turned on, indicating he had been listening to the radio before leaving the garage. He was 51 years old.

Mr. Dayton was born at Terrace Park and was a graduate of the University of Cincinnati. He was a member of the Milford Masonic Lodge, the Robert E. Bentley Post No. 50, American Legion, and the Five Points Club of the telephone company.

Besides his widow he is survived by two children, Richard, 15, and Shirley, 7.

▼

A. L. TAYLOR, manager of the Kankakee exchange of the Illinois Bell Telephone Co., died August 14, following a long illness which came upon him nearly four years ago. He recovered sufficiently to return to his position but suffered a relapse last spring and was confined to bed the last two months. He was 55 years old.

Mr. Taylor was born at Quincy, Ill., on September 16, 1881. He was educated in the public schools of that city and then entered the employ of the Home Telephone Co., an Independent. When that company was merged with the Bell company he joined the latter. Had he lived until next year, Mr. Taylor would have completed 30 years' service with the Bell and would have been eligible to retire.

Mr. Taylor, who was active in all civic affairs, was a director of the Kankakee Chamber of Commerce, former president of the Rotary club, former president of the county chapter of the Red Cross, a member of the Masonic organization and a director of the Kankakee Recreation Association.

Probably his greatest interest outside of his work with the telephone company was the Rotary club. Mr. Taylor joined that organization shortly after going to Kankakee and held every office in it. At the time of his death he was a member of the board of directors. He was also one of the sponsors of the recently organized Rotary club at Manteno.

Mr. Taylor prided himself upon his 100 per cent attendance at Rotary meetings since joining. Even during his first illness, his perfect attendance record was kept intact as his fellow club members adjourned each session to his room at the hospital where his name was called by the secretary and he responded—sometimes feebly—"present."

As leader of the Red Cross in the county he directed numerous campaigns for funds in times of disaster and last winter had charge of the drive for the southern flood relief victims. Under Mr. Taylor's direction, the county's quota for the flood sufferers was greatly oversubscribed.

He is survived by his wife, his mother, a brother and a sister.

▼

FRANK ROBB, New Philadelphia, Ohio, auditor of the Ohio Associated Telephone Co., died unexpectedly on July 30 at the age of 56. He had been with the Independent telephone company in New Philadelphia under two former managements for 23 years and was clerk of the county board of elections for two terms. He was born September 27, 1880.

While on a picnic a week before his death, Mr. Robb contracted what appeared to be a cold and seemingly was much improved when he had a relapse and died suddenly.

Mr. Robb had filled all the chairs in the New Philadelphia lodge, No. 107, I. O. O. F., and served as Kiwanis club secretary for a number of years. He had been employed in the state treasurer's office three years.

Mr. Robb is survived by his widow, Edith K. Robb; one brother, Walter Robb, Dover; one son, John H. Robb, Columbus, and two sisters, Mrs. Edward Roby, Uhrichsville, and Mrs. Ella Frew, of New Philadelphia.

▼

FRANCIS I. DALY, assistant treasurer of the Bell Telephone Co. of Pennsylvania, died at his home in Germantown August 11 in his 60th year. Mr. Daly began his career with the company 43 years ago as a telephone operator. He had been assistant treasurer for 22 years.

He was treasurer of the Cedar Brook Country Club and a member of the City Parks Association. He is survived by his widow, Mrs. Anna Wurts Daly, and a daughter, Mrs. William H. Bartholomew of New York.

WHITNEY BLAKE TELEPHONE WIRE

"WB" wires are made to specifications that are always a step ahead of current telephone requirements. Any conductor—copperweld, bronze or copper—is available. Increased tensile strengths commensurate with conductivities required are always found in "WB" wire.

Illustrated is No. 22—INSIDE WIRE TWISTED PAIR 1/64" WALL SPEC. 4256.

Buy Your Wire by the Year, Not by the Foot

THE WHITNEY BLAKE COMPANY
NEW HAVEN, CONNECTICUT

WB

Graybar QUALITY 1925

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Foreign Distributors: International Standard Electric Corporation, 67 Broad Street, New York City.

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"Telephone's" Engineering Data

By B. C. Burden

Index, General.
Sept. 4, 1937.
No. 43-A, Page 77.

Theory and Practice of the Magneto Telephone Exchange—(Ctd.)

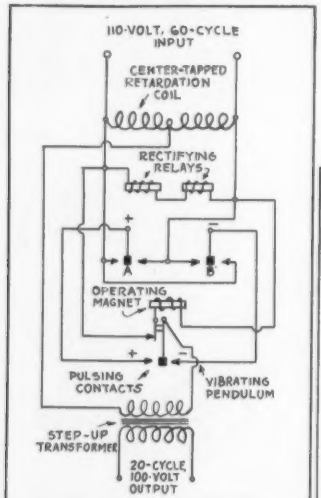


FIG. 76. ALTERNATING CURRENT VIBRATING REED TYPE RINGING MACHINE (LEICH TYPE).

Fig. 76 shows the circuit of one of the early ringing machines of the vibrating reed type (Leich type). The two rectifying relays, A and B, are connected directly across the 110-volt circuit. These relays are each equipped with a pivoted armature which, being polarized by a permanent magnet, vibrates in synchronism with the 60-cycle current making contact first with one and then the other of the stationary contacts. This results in a rectifying action and thus provides a source of direct current which the pendulum, vibrating at approximately 20 cycles per second, can pulse through the primary of the output transformer.

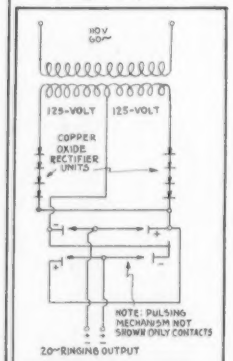


FIG. 77. REED TYPE MACHINE EQUIPPED WITH COPPER OXIDE RECTIFIER UNITS.

The output transformer has a turns ratio of approximately 1 to 2, with the result that the 55 volts obtained by rectification (one-half of the 110 volts) are stepped up to 110 volts at 20 cycles. The frequency on these machines is adjustable by changing the position or number of pendulum weights.

Hundreds of these machines are in service and working satisfactorily; however, they are more prone to give trouble than the more modern type of ringing machine. The vibrating polarized relays, which are necessary to change the alternating current into direct current before it can be pulsed through the primary of the transformer, are particularly troublesome.

These machines have the further disadvantage of causing severe radio interference which requires in many cases the application of special radio frequency filters if radios are to be operated in the vicinity of the machine.

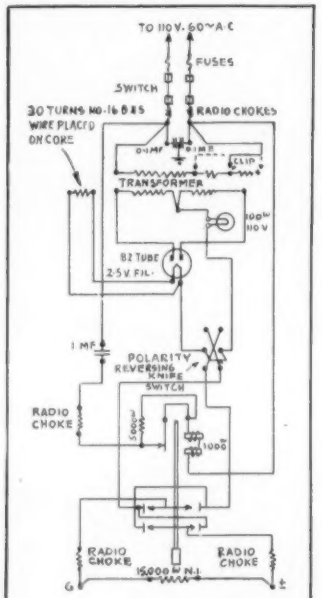
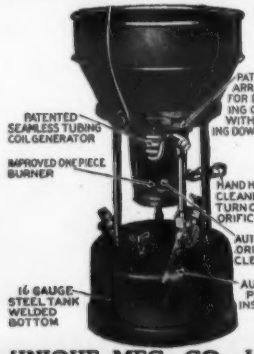


FIG. 78. KELLOGG MACHINE CONVERTED TO VACUUM TUBE RECTIFIER OPERATING.


PATENTED SEAMLESS TUBING COIL GENERATOR
IMPROVED ONE PIECE BURNER
PATENTED ARRANGEMENT FOR DISLODGING COIL WITHOUT TEARING DOWN FURNACE
HAND HOLD FOR CLEANER ONE TURN CLEANS ORIFICE
AUTOMATIC ORIFICE CLEANER
AUTOMATIC PUMP INSIDE TANK
16 GAUGE STEEL TANK WELDED BOTTOM

Gasoline **UNIQUE FURNACE** Kerosene

Designed for Public Utilities to withstand the abuse of splicing service! A fast heater — 50 lbs. solder melted in 10 minutes BUT MORE IMPORTANT — the length of time it will remain in the field free from trouble usually experienced with the average furnace will surprise the old timer. Try a kerosene furnace which will subsequently prove to be better — require less attention—than the best gasoline furnace you ever used.
No. 55 Kerosene, $14.96
No. 53 Gasoline, $13.60
Complete with shield.

UNIQUE MFG. CO., Inc. 221 Whiting St., Chicago

"Telephone's" Engineering Data

By B. C. Burden

Index, General.
Sept. 4, 1937.
No. 43-A, Page 78.

A modified form of this type of machine is available which makes use of copper oxide rectifiers in place of the polarized vibrating relays. The copper oxide rectifier consists of a number of copper oxide disks having the property of passing current in one direction but not in the other. Connected in a full-wave rectifying circuit, as shown in Fig. 77, it is only necessary to drive a pendulum to pulse the rectified direct current. Fig. 78 shows how the older type machines can be converted to a tube rectifier to reduce maintenance.

The Kellogg Vibrating Reed Type Rectifying Machine

Another of the early type machines, and one which is very popular today, is the Kellogg machine which had an arrangement similar to the early Leich machine but with a somewhat different vibrating relay arrangement. Fig. 79 illustrates the circuit of the early Kellogg machine.

It will be observed that an input rather than an output transformer is used. This permits the voltage to be stepped-up from 110 to 220 volts. The voltage is then rectified by the polarized relay, after which it is passed on to the pole-changing contacts attached to the vibrating pendulum. This is a reversal of the procedure in the Leich machine in which the 110 volts were rectified, giving 55 volts, and then pulsed through a transformer and stepped up to 110 volts.

The Telering Machine

Another machine falling in the tuned reed class—and a machine which has been very popular since its introduction a few years ago—is that known as the Telering. This machine operates on a principle basically different from any of the machines described. It does not rely on the method of first changing alternating current to direct current and then passing it through a pole changer. It is designed to work directly from 110-volt, 60-cycle power circuits.

The circuit of the Telering is shown in Fig. 80. It is seen that the Telering consists essentially of an output transformer, a 40-cycle tuned reed, a single set of contacts, a vibrator coil, and a spark-absorbing circuit. The theory of operation is as follows:

When a 110-volt alternating current source is closed, current flows from one side of the line, *A*, down through the vibrator coil and back through the other side of the line, *B*, the circuit being completed through the reed and adjustable contact.

"Telephone's" Engineering Data

By B. C. Burden

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Sept. 4, 1937.
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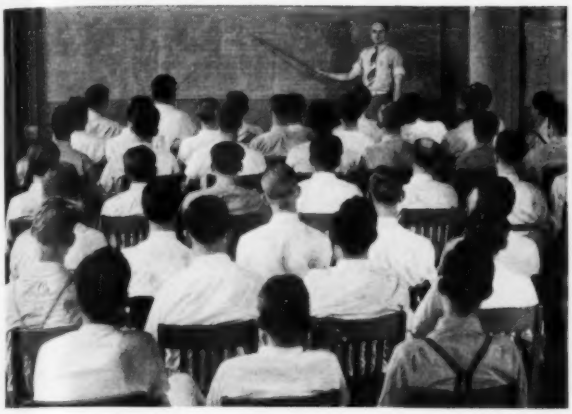
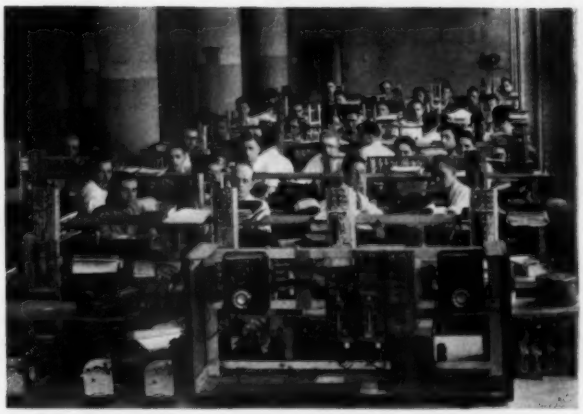


Department of Practical Training, Automatic Electric Training School.



Circuit Instruction, Automatic Electric Training School.

The Manufacturers' Department

Automatic Electric's Training School, Current Session

On Friday, August 27, members of the "class of '37" of Automatic Electric Co.'s technical training school officially completed the course of specialized instruction prescribed by the company as a preliminary to a career in automatic telephony and its allied fields.

This year's "graduates"—50 in number—will immediately begin to put their training to practical use. Many of them will be sent out in the field to assist in installation work, thereby gaining further "on the job" experience. Others will enter the research and development laboratory as circuit designers and development engineers. Still others will be assigned to the equipment engineering department or will enter the various production departments of the Automatic Electric factory.

Included in the group also are employes of operating companies and government departments—men who were sent to Chicago by their principals to get authoritative information on automatic telephony, and who will now return to put their knowledge to work.

The Automatic Electric training school is an institution almost as old as the company itself. A large proportion of the important members of the organization, particularly department heads and others who occupy positions of a supervisory nature, originally entered the business as students and have progressed steadily to positions of responsibility and importance.

The class, which has just completed the course of training, included also 15 students from operating companies in six states, as well as personnel from the U. S. Signal Corps, the Navy Department, the Marine Corps, and the Departments of Commerce and Justice, which for years have recognized both the authoritative nature as well as the practical value of the training.

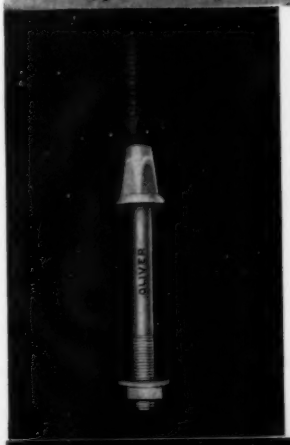
As with schools in many other large industrial organizations, the course of training is strictly post-graduate in nature, and is based on the recognition that academic training must be supplemented by specialized instruction in the design and manufacture of the company's equipment before the prospective worker is in a position to put his training to the best practical use.

Inadequately prepared men are discouraged from entering the school, but the requirements are interpreted in a broad spirit. Many of the students are men with telephone operating experience, who make up in practical knowl-

OLIVER

POLE LINE MATERIAL

A good specification - always!



OLIVER WESTERN UNION PINS MADE TO THE MOST EXACTING SPECIFICATIONS . . . . . .

Oliver Western Union Pins are forged from high carbon, mild open hearth steel and are equipped with the best grade of oak cobs which have been thoroughly boiled in paraffine to exclude all moisture. Available in long shank, short shank and lag screw type.

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OLIVER POLE LINE MATERIALS
APPROVED AND ACCEPTED SINCE 1894
OLIVER

UNIQUE MFG. CO., Inc. 221 Whiting St., Chicago
No. 55 Kerosene, $14.96
No. 33 Gasoline, $13.60
Complete with shield.

Rates for

ADVERTISEMENTS

in this section

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CABLE—LEAD ENCASED

Kennecott Wire and Cable Company, Subsidiary of Kennecott Copper Corporation, Phillipsdale, R. I.—Paper telephone cable, switchboard cable, bare copper wire. Chicago: 140 South Dearborn Street; Cincinnati: Traction Building; New York: 10 East 40th Street.

POLES

B. J. Carney & Co., 100 N. 7th St., Minneapolis, Minn.—Western red cedar poles. Pentrex Butt Treated or Plain.

International Creosoting and Construction Co., Galveston, Texas.—Creosoted Southern Yellow Pine Poles. Plants: Beaumont and Texarkana, Texas.

MacGillis & Gibbs Company, Milwaukee, Wis.—Northern White and Western Red Cedar Poles. Plain or butt-treated. Immediate quotations on request.

T. M. Partridge Lumber Co., Minneapolis, Minn.—Northern White—Western Red Cedar Poles. Plain or butt-treated.

H. Sigalet & Company, Ltd., Lumby, B. C., Canada—Western Red Cedar Poles. Plain or butt-treated.

Valentine Clark Corporation, 2516 Doswell Ave., St. Paul, Minn.—Finished Cedar Poles. Plain or butt-treated.

edge what they lack in formal technical education.

The training course offered by the Automatic Electric Co. is a carefully worked out blending of theoretic and practical work. Part of the school time is spent in assembly, adjustment and inspection operations on various types of relays and switches, as well as on cable forming and switch wiring, and the remainder in theoretic study of circuits and trunking. In the classroom, the principles of the equipment and its mechanical and electrical design are outlined in detail by means of illustrated lectures, and by recitations, quizzes and demonstrations by the students.

The Automatic Electric Co.'s current schedule for the manufacture and installation of automatic telephone equipment is exceedingly heavy, and the training school is one of the factors essential to the maintenance of adequate personnel for engineering, installation and manufacturing operations. This year's session, recently closed, began on June 11. The supervision of the school is in the hands of Harley B. McElyea (E. E., Iowa State, '09), himself a graduate of the course, and now general inspection engineer of the Automatic Electric Co.

▼ ▼

Posture Chair Developed for Stromberg-Carlson

The accompanying illustration shows the new posture chair developed recently by the Sturgis Posture Chair Co., of Sturgis, Mich., for the Stromberg-Carlson Telephone Mfg. Co. The distinctive feature of this chair, known as the No. 416-D Sturgis telephone operator chair, is the plaited, form-fitting back.

The back support measures 9 by 13 inches and is upholstered either in genuine leather or in a frieze fabric. It is easily and quickly adjusted by hand. The seat is of cane, 14 inches deep and 16 inches wide. The seat is adjustable within a range of 22 to 26 inches from the floor, while the circular footrest is 12 inches from the floor.

The base of the Sturgis posture chair is fabricated from 1-inch tubing, all joints being securely welded together. A tubular guard covers the threaded spindle. Although the chair is regularly furnished with nickel-plated, rubber-cushioned glides, it is also available with casters. When so furnished, the seat height is adjustable between a range of 24 and 28 inches.

Use of the name plate on the back will enable each telephone operator to quickly identify the chair that has been adjusted to give her the greatest possible comfort.

The Sturgis Operator's Chair Has a Plaited Back, Especially Designed for Comfortable Support.

This newly-designed posture chair will be distributed exclusively by the Stromberg-Carlson Telephone Mfg. Co., of Rochester, N. Y.

▼ ▼

Burt, Iowa, Gets Kellogg Switchboard

Burt, Iowa, located in the northern part of the state, recently completed the installation of a new Kellogg universal switchboard. This is the third Kellogg switchboard that the Burt Telephone Co. has had during its 40 years of existence. Subscribers are now enjoying common battery service and needless to say, it is appreciated by all. George Koestler, manager, is well pleased with the new equipment and the improved service the company is now offering.

▼ ▼

Telephones in 12 U. S. Cities

There are more telephones in the twelve largest cities of the United States than there are in the entire British Empire.

COMMISSION AND COURT ACTIVITIES

(*Continued from page* 31)

In another order issued August 11 the Kaukauna Telephone Co. was authorized to increase its rural subscriber rates $3 a year, starting with this quarter of the year, to get about $360 more annual revenues in order to avoid a deficit. Even with the increase the company will not get more than $80 return from its operations, the commission estimated. The new rate is $4.50 a quarter. The company in 1936 had a deficit.

The company serves 120 rural customers and gets exchange service from the Wisconsin Telephone Co. at Kaukauna at a cost of $7.50 per customer a year.

▼ ▼

Summary of Commission Rulings and Hearings

Federal Communications Commission, Washington, D. C.

August 16: Application for a wire certificate filed with the telephone division by the Chesapeake & Potomac Telephone Co. of Virginia requesting authority to supplement existing facilities between Fairfax and Falls Church, Va.

August 16: Application for a wire certificate filed with the telephone division by the Michigan Bell Telephone Co. and American Telephone & Telegraph Co. requesting authority to supplement existing facilities between Pontiac and Flint, Mich.

August 18: The commission, at a general session, denied petition of the Garrett Telephone Co., Garrett, Ind., for a rehearing before FCC and entered its order in re docket 3344, effective October 1.

September 11: Hearing in Washington, D. C., before telephone division on application of the American Telephone & Telegraph Co., Lawrenceville, N. J., for authority to utilize the frequent 5085 for communication from its Lawrenceville, N. J., station to London and Paris.

September 11: Hearing before telephone division on three new frequencies sought by the American Telephone & Telegraph Co. for its London and Paris transatlantic circuits.

September 13: Hearing before telephone division, postponed to this date from September 8, on the proposed new direct radiotelephone circuits to four major European countries by the American Telephone & Telegraph Co.

October 6: Further hearing before the chief examiner to be held in the offices of the district attorney, post office and court house building, Cleveland, Ohio, to determine whether the Champaign Telephone Co., Urbana, Ohio, comes under the jurisdiction of the commission.

October 8: Further hearing before the chief examiner to be held at the offices of the Federal Communications Commission, new federal building, Detroit, Mich., to determine whether the Tri-County Telephone Co., South Haven, Mich., comes under the jurisdiction of the commission.

Georgia Public Service Commission

August 12: Order issued authorizing the installation of dial equipment at the Swainsboro and Louisville exchanges of the Southern Bell Telephone & Telegraph Co. and of common battery equipment at the Wadley exchange.

Minnesota Railroad & Warehouse Commission

August 23: In the matter of the application of the Aitkin-Deerwood Telephone Co., of Crosby, for authority to amend its rate for excess line mileage, order issued permitting the company to place in effect, at all of its exchanges, upon the first billing date following the reconstruction and rehabilitation of the lines to which the rate is to be applied, an excess exchange line mileage charge of 50 cents per quarter mile or fraction thereof for individual line service outside the exchange base rate area, computed on air line measurements, from

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Underwriters and distributors of securities of Independent telephone companies
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BURGESS TWIN-SIX BATTERY
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Minimum charge $2.00 for 20 words or less.

FOR SALE

FOR SALE—One No. 3-A-510-B Automatic Addressograph equipped with ½ H. P. 60 Cycle Motor.

One Model F2 Addressograph, ribbon inking, from which motor has been removed.

Approximately 12,000 Style "Y" frames with steel cabinet and drawers. Address J. A. Sullivan, General Manager, Lexington Telephone Company, Lexington, Kentucky.

One three position 450 drop Dean Multiple Magneto Switchboard and Main Frame with 480 Heat coil protectors and 800 prs. of cable terminals. Equipment in excellent condition. Can be seen in service until Sept. 10 when new STROMBERG-CARLSON common Battery Multiple Switchboard will be cut into service. Eureka Telephone Company, Eureka, Ill.

EXCHANGE about 300 telephones, owning all toll and simplex telegraph lines into exchange. Bargain; 25% on investment. S. B. Callaham, Callaham Telephone & Electric Co., Broken Bow, Okla.

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Desk Sets
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BUCKEYE TELEPHONE & SUPPLY CO.
COLUMBUS, OHIO

SPECIALISTS IN
Rebuilding and Repairing
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Absolutely finest workmanship guaranteed.

Grounded Transmitters Made Metallic.

Western Electric grounded type of transmitters, black enameled and rebuilt into metallic late style with full floating diaphragm similar to the No. 323 or No. 337 transmitters ..... $ .80

We guarantee to improve the transmitter 3 decibels and lower the battery consumption by 20% on all such transmitters we rebuild. A trial order solicited, with money-back guarantee that the work must be satisfactory or may be returned at our expense.

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Central Office Heat Coil and Carbon Protection

Cook main distributing frame with No. 10 protectors, per line 40c

W. E. main distributing frame with No. 1269 protectors, per line 60c

Telephone Repair Co.
Daniel H. McNulty, Manager
Rogers Park Station Chicago

POSITIONS WANTED

MAN with eight years' experience in plant accounting, general office work, desires position in Middle West State. Also commercial work and engineering. Address 8654, care of TELEPHONY.

RURAL EXCHANGE—Chief operator experience; widow with daughter; refined personality; good health. Desire place with Christian people, living quarters. Middle states; consider anywhere. Best references. Address 8636, care of TELEPHONY.

WANTED—Cable splicing and switchboard work. Twenty years' experience with Bell and Independent companies. Have testing equipment. Best of references. Will go anywhere and handle any job, large or small. Address 8628, care of TELEPHONY.

POSITION with Independent company. Competent switchboard maintenance, installer, wire chief duties and outside plant. Address 8627, care of TELEPHONY.

ACCOUNTANT OR AUDITOR desires position with Independent telephone company. 18 years' experience in all branches of telephone accounting. Can give A-1 references. Investment considered. Address 8630, care of TELEPHONY.

the point on the boundary of the base rate area nearest to the subscriber's location, and separately for each circuit and for each individual line station.

Nebraska State Railway Commission

September 15: Hearing on complaint filed by the Central Nebraska Telephone Co. of Grant against Chase County Telephone Co., the purpose of which is to compel the latter to cease operating a line between Champion and Lamar.

New York Public Service Commission

August 24: The Vernon Telephone Co., Inc., filed revisions of its telephone tariff schedules which waive service-connection charges during the period from September 1, 1937, to October 31, 1937. The company furnishes telephone service to the village of Vernon and surrounding rural territory in Oneida County.

The commission permitted the change to become effective September 1. The elimination of service-connection charges during this two-month period is for the purpose of stimulating new business and encouraging the reconnection of disconnected telephone stations.

Ohio Public Utilities Commission

August 31: Hearing on a complaint filed by the Northern Ohio Telephone Co. against the Wellington Telephone Co. in which it was charged that the Wellington company unlawfully invaded the complainant's Oberlin exchange area.

September 28: Hearing scheduled in the state-wide Ohio Bell Telephone Co. rate case to consider the amount of refunds for the period of 1925-1932.

South Dakota Board of Railroad Commissioners

August 23: In the matter of the application of Dakota Central Telephone Co. for an order establishing and approving a schedule of terminal fees or commissions for toll messages for application to communications interchanged between the toll lines of the applicant and the exchange of the city of Brookings, order issued approving the contract and the rates agreed upon.

Wisconsin Public Service Commission

August 11: Commonwealth Telephone Co. authorized to increase its rates $260 a year at its Lac du Flambeau exchange but was ordered to furnish 24-hour service by September 1.

August 11: Kaukauna Telephone Co. authorized to increase its rural rate $3 a year, effective this quarter, making the total rate $4.50 per quarter. The company has 120 subscribers and even with the increased rate will barely show a profit, it testified.

August 11: The Farmers Telephone Co., of Potosi, was granted permission to install a $1,200 common battery switchboard in its exchange and the Hammond Telephone Co. to install a $1,800 switchboard.

August 11: The Mauston Telephone Co. and the Community Telephone Co. were permitted to continue temporary rate schedules in effect.

September 8: Hearing on application of the Iowa & Lafayette County Farmers Telephone Co. for authority to increase its rates to a fixed $14 per year. The rate has averaged from $10 to $12.